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**No. 128**



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BIOMEDICAL AND BEHAVIORAL SCIENCES  
No. 128

This serial publication contains articles, abstracts of articles and news items from USSR scientific and technical journals on the specific subjects reflected in the table of contents.

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NEW BOOK DEALS WITH WORLDWIDE PHARMACEUTICAL BUSINESS

Moscow FARMATSIYA in Russian No 3, 1979 pp 71-72

[Review by E. M. Shenbaum (Sochi) of the book "Global'nyy farmatsevticheskiy biznes" by V. V. Zharkov, Moscow, Meditsina, 1977, 116 pages]

[Text] The book of V. V. Zharkov shows convincingly that the pharmaceutical monopolies of the capitalist world (Hoffman-LaRoche, Merck, Schering and others) do not consider any standards of ethics when it is a question of profits.

The author writes in the introductory part of his monograph: "Pharmaceutical corporations should be justifiably put in first place among all monopolies with regard to scope and shameless exploitation of man."

In the next chapters ("New Geography of Pharmaceutical Monopolies," "Sources of Profit," "Efforts at Control"), this thesis is properly confirmed. Year after year, the pharmaceutical industry of the United States is in first place according to profits, among the ranks of corporations of other branches of the economy. In 1974, it overtook companies dealing with the production of cosmetics, trucks, chemistry and development of fuel resources. In 1975, as before, the pharmaceutical industry was the most profitable branch of the American economy.

The author cites the description of the pharmaceutical industry given by the American researcher, O. J. Unger: bitter competition plus virtually unlimited profit.

Setting monopolistic prices, exploiting the labor of workers by all the newest methods, use of cheap labor by organizing branches in less developed countries and fraudulent schemes to reduce income taxes are not in last place among the means used by pharmaceutical companies to gain a profit. Advertising has been transformed into a means of mass stock jobbing and exerting pressure on the consumer, who also pays for it. The physicians at the Karolinska Hospital in Sweden reported that 5675 pieces of advertising material was mailed to them in one day. Dutch physicians have estimated that in the medical periodicals that they read there are 1300 pages of advertisements per 2500 pages of text. According to the advertisement for one drug, it can be used to treat 88 diseases, including lesions to the spinal cord, thrombophlebitis and hydrops.

Free samples are sent out for advertising purposes, not only to physicians but the public, and this harbors the danger of them being taken by individuals for whom they are contraindicated. In 1973, for example, about 2 billion free samples of products were distributed in the United States.

Use of a brand name is another aspect of the problem. According to the table submitted in the book of differences in prices charged by pharmacies for drugs dispensed under trade names and pharmacopeia names, we see how this difference operates in favor of the pharmaceutical business.

The tables also reflect the volume of production and sales of drugs in the main capitalistic countries, indices of concentration of pharmaceutical industry in them, activity of the transnational pharmaceutical monopolies, structure of cost of production and prices for drugs set by different companies.

The author made a study of an extensive literature, articles in foreign periodicals and newspapers, records of the World Health Organization and World Health Assembly, numerous annual reports of corporations, although the reliability of the latter turned out to be questionable: underrated actual profit and exaggerated figures referable to production costs.

The subtitle of the book is "Analysis of Socioeconomic Aspects of Expansion of Transnational Pharmaceutical Monopolies," but the author deals primarily with ethical issues. He recalls the scandalous example of carelessness in the manufacture of the "sedative" thalidomide, which was developed in the FRG and taken over for production and sale by an English firm which was more specialized in the production of different brands of whiskey. In an effort to be repaid for the product as quickly as possible, the corporation released an enormous amount of thalidomide on the market without thorough inspection. As a result of taking this product, pregnant women began to deliver infants with congenital defects, and there were about 20,000 such infants in countries of West Europe.

In France, "bolul" powder, used to bathe children, was the cause of 70 fatalities.

In the United States, amphetamine, which is by far not a harmless central nervous stimulant, is on the open market; 36,700 tons of amphetamine are produced annually, which is enough to provide 18 doses thereof for all the people living in the United States. In the USSR, phenamine (amphetamine) is on the A list of narcotics.

In England, there are several hundred drugs on the market that were taken off the market in the United States because of their officially established inefficacy.

The book also discusses some positive aspects: rationalization of production, refinement of technology and reduction of unproductive expenditures. However,

they also serve business. The author views the distinctions of the pharmaceutical industry as one of the "key areas of competition between two social systems."

The book contains extensive informative material, and it is very interesting to read.

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STANDARDIZED METHOD FOR PHOTOMETRIC ASSAYS OF ORGANOPHOSPHORUS DRUGS

Moscow FARMATSIYA in Russian No 3, 1979 pp 41-44

[Article by T. N. Bokovikova, V. Ye. Chichiro, L. K. Karpova and A. A. Andrianov, State Scientific Research Institute for Standardization and Control of Drugs, Moscow; Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Kazan' Branch of the USSR Academy of Sciences, Kazan', submitted 5 Oct 78]

[Text] Mainly titrimetric [1, 2, 7] and photometric [3-7] methods, after premineralization of organic compounds, are used for quantitative assays of phosphorus in phosphorus-containing organic compounds. The existing methods of analysis of drugs according to phosphorus are not standardized; they are lengthy and laborious.

This report deals with development of a standardized photometric technique for assaying organophosphorus drugs according to phosphorus.

Photometric methods of assaying phosphorus are based on formation of heteropolycomplexes (HPC), where phosphorus (phosphoromolybdenum complex) or vanadium phosphate (complex center in a phosphorus-vanadium-molybdenum complex) is the central atom, while molybdate polyions are coordinated groups. The triple complexes have several advantages over dual compounds [3].

In our studies, we used a technique based on formation of a triple phosphorus-vanadium-molybdenum (PVMo) complex.

It was also interesting to investigate the conditions of mineralization of organophosphorus drugs and to choose the most efficient and simple method of oxidation of phosphorus to orthophosphate.

#### Experimental Section

In this work, we used the method of mineralization with potassium permanganate in concentrated nitric acid. The nitric acid was replaced with concentrated sulfuric acid, since part of the phosphorus remains in lower valent forms in the presence of nitric acid [4], and this has an adverse effect on the final result of analysis.

The potassium permanganate excess or forming sediment of manganese dioxide was reduced with ethanol. It was experimentally established that ethanol is neutral to the stained complex, while manganese in amounts of 0.07 g/100 ml end solution of the complex (on the basis of mineralization conditions) does not prevent assaying phosphorus.

The described method of mineralization has an advantage over other methods of "wet combustion": no heat-resistant dishes are needed, available reagents are used and mineralization time is reduced to one-sixth--one-eighth the usual time.

In order to test the possibility of using the triple  $PVMo$  complex for photometric assay of phosphorus in organophosphorus compounds, we studied the absorption features of the complex in aqueous solutions containing 2-10  $\mu\text{g/ml}$  phosphorus.

Taking into consideration data in the literature [5, 6] and the results of our own studies, we measured the optic density of complex solutions at a wavelength of 420 nm. The reference solution is virtually transparent optically.

We studied the optimum conditions of formation of the  $PVMo$  complex. It was established that maximum optical density of the  $PVMo$  complex is observed in the pH range of 0.6-0.8, and that 10-30 ml is the optimum amount of vanadate-molybdate reagent. The complex is formed 5 min after addition of the reagents and it is stable for 2 h. The reagents are stable in the temperature range of 10-50°C, and coloration of the complex is not sensitive to temperature changes. Light absorption of stained  $PVMo$  complex solutions is governed by the law of Beer in the range of concentrations of 2 to 10  $\mu\text{g}$  phosphorus per ml solution of the complex (quantitative assay was made in comparison to standard solution of monosubstituted potassium phosphate; calculation of the amount of substances in the preparations was made using the well-known formula [3]). On the basis of the obtained data, a standardized method was developed for assaying organophosphorus drugs, based on formation of the  $PVMo$  complex.

About 0.04 g product (for thiophosphamide), or 0.06 g (for dipin), or 0.1 g (for armin, nibufin, chlorophthalm), or 0.15 g (octathion) is placed in a dry tapered 250-ml flask; 20 ml concentrated sulfuric acid is added, then carefully 2 g potassium permanganate. The flask is heated in a boiling water bath for 30 min. It is then cooled, 50 ml water and 1 ml 95% ethyl alcohol are added, then heated over a boiling water bath until the liquid becomes clear. It is then cooled, transferred into a 250-ml graduated flask and the volume of solution is brought up to the mark (solution A) with water. Solution A, in amounts of 15 ml (for chlorophthalm and armin), or 20 ml (for octathion, nibufin, dipin, thiophosphamide, chloraceto-phos), is decanted into a 100-ml graduated flask and the following are successively added: 25 ml water, 20 ml vanadate-molybdate

reagent\* and the volume of solution is brought up to the mark with water. After 30 min, the optical density of the obtained solution is measured on an SF-16 spectrophotometer at a wavelength of 420 nm in a cuvette with a layer 10 mm thickness. The reference solution is a mixture of reagents without the tested agents. Concurrently, the optical density of a standard solution of monosubstituted potassium phosphate containing 1.5 ml diluted sulfuric acid, 2 ml vanadate-molybdate reagent and 0.0008 g phosphorus in 10 ml solution is also measured. A control test is made for possible admixture of phosphorus in the reagents (concentrated sulfuric acid, potassium permanganate, etc.).

This standardized method was used to assay chlorophthalm, thiophosphamide, armin, dibufin, octathion, dipin, chloracetophos and chloracetophos in 5% and 7% ointment form.

A comparative quantitative assay was made of these agents using the new standardized method—triple PVMo complex (method I), the method of formation of a dual reduced phosphoromolybdenum HPC—"molybdenum blue" (method II) and the official analytical method.

The agents were assayed according to formation of "molybdenum blue" using the method described by M. D. Kofman et al. [7].

The results of assaying these agents by the three methods are listed in Table 1.

Table 1. Results of quantitative assays of organophosphorus compounds (n = 5)

Product	Photometric method				Official method	
	method I		method II		$\bar{x} \pm s_x$	A%
	$\bar{x} \pm s_x$	A%	$\bar{x} \pm s_x$	A%		
Chloracetophos	99.40 $\pm$ 0.31	0.38	99.64 $\pm$ 0.65	0.65	99.50 $\pm$ 1.28	1.28
Octathion	100.24 $\pm$ 0.66	0.65	100.66 $\pm$ 2.14	2.13	99.82 $\pm$ 0.50	0.50
Armin	99.71 $\pm$ 0.56	0.56	99.96 $\pm$ 0.60	0.60	98.76 $\pm$ 2.44	2.47
Dibufin	99.85 $\pm$ 0.46	0.46	100.77 $\pm$ 1.14	1.13	98.23 $\pm$ 1.00	1.01
Dipin	99.78 $\pm$ 0.36	0.36	99.71 $\pm$ 1.11	1.11	99.72 $\pm$ 0.41	0.41
Thiophosphamide	99.78 $\pm$ 0.14	0.14	99.59 $\pm$ 0.56	0.56	99.70 $\pm$ 0.63	0.63
Chlorophthalm	99.56 $\pm$ 0.57	0.57	99.83 $\pm$ 0.94	0.95	99.78 $\pm$ 0.76	0.77

\*Preparation of vanadate-molybdate reagent: (1) 5% aqueous solution of ammonia molybdate; (2) 2.5 g ammonia vanadate is dissolved in 500 ml hot water in a one-liter measuring flask; 20 ml concentrated nitric acid is added and the volume is brought up to the mark with water. Solutions (1) and (2) are mixed in a ratio of 1:1 (by volume).

Table 1 shows that comparable results are obtained with the three methods. However, the standardized method yields more reproducible results; it is less laborious and reduces the time required to make the analysis.

The standardized method we developed was also used for quantitative assay of phosphorus in 5% and 7% chloracetophos ointment.

Assay of phosphorus in chloracetophos ointment: About 0.2 g for 5% ointment or 0.15 g for 7% ointment (accurately measured batch) is placed in a crucible; 1 g anhydrous sodium carbonate is added, and the whole is ashed in a muffle furnace at 750-800°C. The contents are cooled, transferred into a graduated 50-ml flask in measured amounts, treated with 10 ml diluted sulfuric acid, and the solution volume is brought up to the mark. It is then filtered. To 20 ml filtrate we add 7 ml diluted sulfuric acid, and the mixture is boiled for 1 min. It is cooled, transferred into a 50-ml graduated flask, 10 ml vanadate-molybdate reagent is added, and the solution volume is brought up to the mark with water. We then proceed as described for the standardized method.

The results of the readings are listed in Table 2.

Table 2. Results of quantitative assay of phosphorus in 5% and 7% chloracetophos ointment by the standardized method (n = 5)

Product	Series	$\bar{x} \pm s_x$	A%
Chloracetophos ointment 5% (0.52% phosphorus)	Model	0.512 $\pm$ 0.014	2.77
	mixture	0.534 $\pm$ 0.011	2.06
	20574 50574	0.502 $\pm$ 0.022	4.38
Chloracetophos ointment 7% (0.72% phosphorus)	10574	0.702 $\pm$ 0.015	2.13
	11274	0.679 $\pm$ 0.010	1.46

Note: Theoretical phosphorus content in chloracetophos ointment is given in parentheses.

Table 2 shows that reproducible results were obtained.

#### Conclusions

1. A study was made of conditions and a standardized method was proposed for mineralization of organophosphorus compounds with potassium permanganate in concentrated sulfuric acid during heating.



2. A standardized photometric method was developed for quantitative assays of organophosphorus drugs (on the example of chlorophthalm, dipin, armin, nibufin and others), which is based on formation of a triple phosphorus-vanadium-molybdenum complex.

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## PUBLIC HEALTH

### MEDICINES FROM MARINE ORGANISMS

Moscow TRUD in Russian 26 Sep 79 p 4

[Article by I. Mosin under rubric "Science Conducts the Search": "Medicines from the Bottom of the Ocean"]

[Text] Our conversation with I. Azhgikhin, head of the Laboratory of Biologically Active Substances of Hydrobionts of the All-Union Scientific-Research Institute of Marine Fishing and Oceanography, was interrupted by the telephone. Several times during his short phone conversation he said:

"Good, very good, simply wonderful."

The news was so obviously pleasant that Il'ya Stepanovich could hardly wait to share his happiness:

"Recently we produced a new compound from plankton crustaceans. One of the departments of our institute is testing its properties. It turns out that they are very good. The medicine cleans pus from wounds, is effective as a healing agent, promotes the reduction of cholesterol in the organism, and improves the functioning of the liver. So the primary results are very encouraging."

Scientists have observed that sharks, those predators of the deep, have superb health. They are not subject to infectious diseases, and wounds on their bodies heal very quickly. Why is this? It turns out that sharks are able to maintain superb health because of the large quantity of antibodies in their blood. Most living organisms produce antibodies only when threatened by invasion by antigens. In predators, antibodies are in the blood constantly, as if in reserve.

Research has shown that these antibodies block the multiplication of bacteria and viruses in the human organism. The shark's liver also possesses remarkable properties. It contains various chemical compounds which act against inflammation and stimulate heart activity. Specialists are presently studying the shark's organism carefully. In the laboratory the liver of the spiny dogfish, which lives in the Black Sea, has yielded compounds capable of resorbing neoplasms.

And there is another curious story relating to these predators of the seas. There is nothing in the sea more dangerous to man than sharks. Since ancient times, men have tried to find a reliable defense against them. The following experiment was carried out. In a pool, a small fish inhabiting the Red Sea was released to hungry sharks. Not one of the bandits of the deep dared to get near it. The hungriest finally couldn't stand it and went on the attack. Just as suddenly, it fell to the bottom with its toothy mouth wide open. A small white cloud released by the small fish had paralyzed the shark's swallowing muscles. Now researchers are trying to synthesize this poisonous "shark repellent..."

According to I. Azhgikhin, by now scientists have just about "worked through" all of the earth's plants and animals. It is not likely we will get anything more from them. Now the important thing is to obtain new compounds via synthesis. As a rule, however, this takes many years and millions of rubles. A long and costly procedure.

It is time to turn to a rich source of various organisms, compounds, and substances--the World Ocean. Of its 500,000 inhabitants, only about six percent have been thoroughly studied.

In early archeological finds there is mention of certain fishes which, when used as food, cause poisoning and even death. The hieroglyphic inscription on the tomb of Pharaoh Ti mentions the "chep" fish or, as we call it now, "boxfish." Served at the royal table, it was the cause of the pharaoh's death.

Scientists have determined that the flesh of the boxfish contains a powerful poison--tetrodotoxin. Its toxicity is more than 100,000 times that of the famous curare. The discovery of tetrodotoxin gave impetus to the systematic study of poisonous fishes.

At present, this substance is being used in clinics as a powerful pain-killer and tranquilizer. It is an essential instrument in fundamental biological research. Researchers are seeking new fields of application of this unusual "medicine of the sea." Stocks of tetrodotoxin in the World Ocean are enormous. About 40 species of marine organisms are known today whose tissues are literally permeated with poison.

Another and even more astonishing substance is the prostoglandins. They were first produced in the laboratory. But the cost of these synthetic medicines has ranged from 1 to 3 million dollars per kilogram. Then, unexpectedly, corals were discovered in the Caribbean Sea whose tissues yield several types of prostoglandins.

The field of application of prostoglandins is truly enormous. They can be used to treat hypertonia, bronchial asthma, and allergy attacks. They block the formation of blood clots and dissolve those that have already formed. In addition, they heal wounds, stop internal bleeding, and calm nerves. Prostoglandins not only cure sickness but also prevent it, which is even more valuable.

The production of medicines from marine organisms costs 20 times less than synthesis.

The institute's laboratory has learned to extract prostoglandins from polyene acids found in the oils of molluscs, crabs, and other marine organisms. The production of the acids themselves costs no more than three rubles per gram. Foreign specialists consider the production of prostoglandins to be profitable if it does not cost more than 10 dollars per gram.

No less useful to medicine is the sea cucumber--the Japanese holothurian. Elixir from it helps humans to get better after sickness. It also regulates blood pressure, reduces cardiac muscle fatigue, and stimulates metabolism.

In sea toadstools, scientists have found antibiotics that are more effective than the "king of medicines"--penicillin.

One compound derived from molluscs is a thousand times more powerful than nitroglycerin in affecting blood circulation. And the action of this substance on the organism lasts for hours, long after it has disintegrated.

And here is a completely unexpected finding. The soft tissues of octopi, cuttlefish, and jellyfish have been found to contain a whole complex of amino acids, glucosides, and vitamins. They have a very calming effect on persons that have been subjected to excessive noise, vibrations, and nervous tension. It may be that soon we will find on the shelves of drugstores medicines with the label "For Inhabitants of Large Cities."

"The Laboratory of Biologically Active Substances of Hydrobionts is as yet the only one in this country," says I. Azhgikhin. "We are investigating marine flora and fauna containing biologically active substances. These compounds are of great interest to medical scientists, chemists, and livestock specialists.

"Although the laboratory has existed for less than three years, in that time we have succeeded in investigating dozens of marine fishes, algae, corals, and other organisms. On the basis of these findings we are already developing medicines possessing miraculous properties."

In addition, a technology has been worked out for utilizing toxins extracted from fishes. Biologically active substances will be used to develop medicines, while the flesh of the fish, which is rich in protein, will be used to feed livestock, fur-bearing animals, and poultry.

This year has seen the first Soviet book on hydrobionts as sources of medicine. But this is just the beginning. So far we have investigated only one percent of the marine organisms containing biologically active substances.



## SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

### INSTITUTE MAINTAINS PAVLOV TRADITIONS

Moscow IZVESTIYA SOVETOV NARODNYKH DEPUTATOV in Russian 27 Sep 79 p 3

[Excerpt of article by correspondent V. Nevel'skiy: "Heirs of a Great Scientist (130th Anniversary of the Birthday of I. P. Pavlov)"]

[Text] Thus began the collaboration of geneticists and physiologists, and soon they were joined by a neuropathologist, Professor I. Lapin, laboratory head of the Institute imeni Bekhterev. The Polish Professor Yezhi Voyke supplied mutant bee parents for experiments.

I emphasize immediately that the role of neuro-active substances in insects was not studied previously. Everything being discussed is being done for the first time. Very interesting facts have been obtained already.

Each stage of metabolism is associated with the action of some kind of enzyme. Mutations of bees change the activity of sequential action of these enzymes. Therefore, researchers, "excluding" one or another enzyme from the operation of the organism, may determine how this affects the behavior of a bee, say, in its dance by which it signals to other bees; having found the honey flow, to indicate where it is located. The blocking out of the effect of one of the enzymes greatly slows the rhythm of the dance and the "switching off" of another causes the bee to dance much more quickly than usual.

Disturbances of metabolism lead to a change of eye color in bees. Scientists now can tell what biochemical changes have occurred in the organism of insects by the eye color. They may eliminate disturbances in the nervous system by introducing the required pharmacological substances.

Regrettably, we have very little space to tell of the day-to-day affairs of associates of the scientific cantonment. You know the Institute imeni Pavlov is unique in that here are represented almost all trends of contemporary physiology. The range of interests of only 9 major laboratories (and there are dozens of scientific research groups and subdivisions in the institute) extend from individual nerve cells of the brain to general

principles of behavior of anthropoid apes, from the study of physiological mechanisms of the memory up to problems of concentration of attention by a man-operator which controls complex industrial processes.

"We are carefully preserving and developing the Pavlovian scientific traditions" says Acting Director of the Institute Professor K. Ivanov. Modern technology permits the use of completely new methods of research, unknown in Pavlov's time. For example, we can study individual nerve cells in an animal without using narcosis and observe these cells even in deep layers of the brain and study their energetics or explain the resistance to different harmful factors.

Ivan Petrovich Pavlov once wrote that in spite of the unbelievable complexity of biological and physiological phenomena, the time will come when it may be possible to express and describe them with the use of exact mathematical formulas. This time has arrived. Mathematics and the EVM [electronic computer] make it possible, today, to translate the most complex observations into the exact language of numbers. A typical instance: recently there was defended at the institute a dissertation on the theme of mathematical analysis of the formation of habits of complex behavior in anthropoid apes. This is not an exceptional case. Practically all scientific subdivisions use the services of the institute's Computer Center.

Scientific technical progress and the special conditions of the life of modern man present physiologists with new unusual tasks. For example, two laboratories of the institute are presently participating in development of a major international program "The Artificial Heart." Associates of the scientific village are involved in another important problem, the creation of so-called "Artificial Blood." Experiments in the program "Artificial Food" are planned. Equally interesting is the development of problems of underwater physiology which is necessary for man in his utilization of the biological and mineral resources of the sea bottom.

We must also mention physiological research for the purpose of creating technical systems for automatic recognition of speech. Today, man has an improved computer technology, a multitude of highly complex machines and mechanisms. It becomes increasingly difficult to control them. The management of highly complex robots which "understand" verbal commands would be most helpful in handling this task. However, the creation of such robots is still impossible since we do not yet understand the physiological mechanisms of perception and understanding of speech. Many associates of the laboratories of biophysics and the physiology of speech are now working on this very problem.

2791

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## SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

### USE OF RADIO ELECTRONICS IN THE STUDY OF SUPERWEAK LUMINESCENCE OF BIOLOGICAL SUBJECTS

Kiev VISNYK AKADEMIYI NAUK UKRAYINS'KOYI RSR in Ukrainian No 9, 1979 pp 103-104

[Article by V. A. Baraboy and Ye. P. Sidorik, doctors in medical sciences concerning a Ukrainian conference in Kiev]

[Text] The study of chemoluminescence of biological systems is a new scientific trend in biology and medicine whose development is associated with the names of Soviet scientists, primarily B. M. Tarusov, doctor in biological sciences.

Photon emission is one of the channels of discharge of excited electron states which occur in biological systems during certain metabolic reactions. Sources of spontaneous chemoluminescence of biological fluids and tissues obviously include recombination of peroxide radicals that are formed primarily in the process of auto-oxidation of cell membrane lipids. Under stationary conditions, the stability of luminescence is assured by the presence of tissue antioxidants in the lipids. The level of spontaneous luminescence thus reflects the state of dynamic equilibrium between the intensity of free radical oxidation of lipids and the activity of systemic antioxidants. Change in a given level due to various agents is a very sensitive indicator of the state of the organism.

Since the discovery in 1961 of spontaneous chemoluminescence of animal tissues, ten scientific conferences have been held in our country dealing with various aspects of this question. On the initiative of the Kiev Scientific-Research Roentgenological and Oncological Institute of the Ukrainian Ministry of Health, the Institute of Problems of Oncology of the Ukrainian Academy of Sciences, the Science Council on Problems of Radiobiology of the Ukrainian Academy as well as the Ukrainian Republican Administration of the NTT of Radio Technology, Electronics and Communication imeni O. S. Popov, in December of last year Kiev was host to a conference in problems of utilization of radio electronics in the study of superweak luminescence of biological subjects.

More than 160 scientists and specialists from Moscow, Leningrad, Kiev, Minsk, Riga, Tallin, Tashkent, Novosibirsk, Gorky, Kharkov, Odessa, Ivov, Simferopol, Uzhgorod, Ivano-Frankovsk, Dubna, Pushchino and Bratsk participated in the conference.

Some 78 reports were delivered at the conference: 28 were read at plenary sessions and the others were exhibited in displays.

The conference constituted a summary of the state of the art of chemoluminescence research. It was stated that the absence of serial production of chemoluminometers limits the widespread utilization of chemoluminescent methods in medicine, biology and agriculture. Because of the successful ongoing collaboration of coworkers of Kiev in radio electronics with scientists of the Ukrainian Ministry of Health's KNDRROI and the Institute of Problems of Oncology of the Ukrainian Academy of Sciences, research prototypes of chemoluminometers specially designed for the requirements of medical and biological research have been approved.

Essential improvements in the technical characteristics of equipment has even now made it possible to switch from recording superweak luminescence of biological subjects activated by adding ions of iron, copper, hydrogen peroxide, etc. to biological specimens to the study of spontaneous chemoluminescence of tissues and biological fluids; this is surely a leap forward in the improvement of methods of chemoluminescent analysis. Research of spontaneous chemoluminescence of blood serum of different sex, age, species done by scientists of Ukrainian Ministry of Health's KNDRROI can now permit us to consider this indicator as a major biological constant.

Substantive scientific results have been obtained by workers of the Institute of Problems of Oncology and KNDRROI in the study of the mechanics of superweak luminescence, in investigating chemoluminescence in the tumor process and also due to exposure to ionizing radiation under experimental and clinical conditions. The use of methods of chemoluminescent analysis is an additional diagnostic and prognostic test in oncology and in assessing radiation injury.

Many data have been obtained by scientists of Moscow Institute of Transplantation and Artificial Organs of USSR Ministry of Health. They were able to show that the chemoluminescent method is the most sensitive one in the study of viability of transplanted organs (cornea, kidneys); and that chemoluminescence indicators are the earliest sign of a kidney transplant rejection crisis. These data were a starting point for improving methods of corneal preservation and monitoring acceptance of transplanted organs.

Chemoluminescent research of patients' blood has also been successfully employed in the surgical clinic for diagnosis of acute inflammatory diseases of the abdominal cavity, in the cardiology clinic for monitoring the state and efficacious treatment of patients with myocardial infarction, for health assessment of industrial hazards, etc.



The conference coordinated successful cooperation between scientists, designers and coworkers in radio electronics of the Ukrainian capital in developing new models of industrial chemoluminometers for medicine and biology, in using the set of methods for studying the nature of superweak luminescence and employment of chemoluminescent methods in comprehensive diagnosis of several diseases and monitoring the effectiveness of treatment, and adopted a decision to create a scientific and methods center to introduce chemoluminescent methods of investigation based at the Institute of Problems of Oncology of the Ukrainian Academy of Sciences and the Kiev Scientific-Research Roentgenologic and Oncological Institute of the Ukrainian Ministry of Health.

A collection entitled "Chemoluminescent method in biology and medicine: equipment, methods and application" was prepared and published prior to the conference. Equipment, devices and appliances used in chemoluminescent research and studies of conference participants were all exhibited during the conference.

The initiative for arranging what is essentially the first representative inter-agency meeting with participation of leading specialists of the country in radio electronics, metrology, biophysics, radio biology, animal and plant physiology, cybernetics and computer technology won the unanimous praise of the participants. It was recommended that such conferences be held every four or five years.

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CS0: 1811

USSR

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## YIELD, QUALITY OF WHEAT AND PROTEIN FRACTION COMPOSITION OF GRAIN AFTER ANNUAL HERBICIDE TREATMENT FOR FIVE YEARS

Moscow IZVESTIYA TIMIRYAZEVSКОЙ SEL'SKOKHOZYAYSTVENNOY AKADEMII in Russian  
No 3, 1979 pp 78-86 manuscript received 30 Nov 78

ZINCHENKO, V. A., TABOLINA, YU. P., IGNATOVA, N. G. and MOSKALENKO, G. P.,  
Chair of Chemical Agents for the Protection of Plants

[Abstract] Field experiments were conducted in 1975 and 1976 at the Kara Karabalykский Experimental Station in northern Kazakhstan on Saratovskaya 29 wheat using a new approach demonstrating differences in effects of herbicides according to frequency of use. A 33% emulsion of a mixture of others (C7-C9) of 2,4-D; a 48% aqueous solution of banvel-d; and a 25% concentrate of tordon 22k were the herbicides used. The effects thereof depended on weather conditions and mechanism of action in the case of 2,4-D: useful parameters declined under the dry conditions of 1975 after use for many years, and the 2,4-D had a mild effect in the more humid year. Banvel-d and tordon 22k lowered development and harvest after use for several years, but had a milder effect in the drier year. Prolamine, glutelin and albumin levels were subject to the greatest change with the use of these herbicides. Although the protein content of grain increased during many years of use of banvel-d and tordon 22k, the grain yield was diminished to such an extent that total protein yield also diminished. A less harmful method must be found to treat plants. Figures 4; references 30: 28 Russian, 2 Western.

USSR

## LASER BEAM SCARIFICATION OF SEEDS

Kishinev ELEKTRONNAYA OBRABOTKA MATERIALOV in Russian No 4, 1979

GALAY, N. V., Poltava

[Abstract] As an alternative to production methods for seed cracking which destroy the protective coating, an experimental device and procedures were developed for using a laser beam to crack vetch seeds. Field tests of the seeds cracked by laser showed a very high ratio of sprouting, along with storing and time of preparation advantages. Figure 1; reference 1 (Russian).

001/12131

USSR

#### MECHANISMS OF PERSONALITY FORMATION

Moscow VESTNIK MOSKOVSKOGO UNIVERSITETA SERIYA PSIKHOLOGIYA in Russian No 1, 1979 pp 3-8 manuscript received 31 Oct 78

ZFYGARNIK, B. V.

[Abstract] A brief survey is presented on the mechanisms involved in the formation of personality with emphasis on the fact that, unlike procedures employed in practice in the West, pathopsychological phenomena cannot be utilized as models to study development of personality. In addition, it is held that a conflicting situation or resolution of contradictions leads to a neurotic personality only in situations in which adequate compensatory mechanisms are lacking. External similarities between a healthy or normal personality and a disturbed personality do not per se indicate similar mechanisms, and the formation of the latter personality does not duplicate the formation of a normal one. References 15 (Russian). [556-12172]

USSR

UDC 615.214.22.015.4:615.821:616.45-001.1].3

#### EFFECT OF PSYCHOTROPIC PREPARATIONS ON THE BEHAVIOR OF INBRED MICE UNDER EMOTIONAL STRESS

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 88 No 7, Jul 79 pp 38-40 manuscript received 14 Dec 78

SEREDENIN, S. B. and VEDERNIKOV, A. A., Laboratory of Pharmacological Genetics, Second Moscow Medical Institute imeni N. I. Pirogov

[Abstract] The genetic differences in the action of the new Soviet psychotropic drugs phenazepam and sydnocarb on mice behavior under emotional stress were studied using C57BL/6 (B6), CBA and BALB/c (C) mouse strains. The "open field" stress using four lamps, phenazepam doses of 0.05, 0.075 and 0.1 mg/kg and sydnocarb doses of 6, 12 and 24 mg/kg was employed. Mice of line B6 demonstrated the greatest motor activity in all experiments and line C the least. Phenazepam in B6 mice decreased motor activity proportional to dose while in CBA the threshold was 0.1 mg/kg. In line C mice motor activity was increased at the lower doses of phenazepam and decreased at 0.1 mg/kg; this is due to an orientating reaction in B6 mice and an anxiolytic effect in the more passive C mice. In B6 mice sydnocarb was a psychostimulator, with the

effect increasing with dose, while it had no effect in CBA mice and only increased peripheral motor activity in line C mice at the highest dose. The results indicate that initial reaction to stress and its correction by phenazepam and sydnocarb are genetically influenced. References 6: 4 Russian, 2 Western.



## IMMOBILIZATION OF PECTAWAMORIN GLOx BY INCLUSION IN A GEL

Moscow PRIKLADNAYA BIOKIMIYA I MIKROBIOLOGIYA in Russian Vol 15 No 5, Sep/Oct 79 pp 747-750 manuscript received 17 Oct 78

BOGATSKIY, A. V., DAVIDENKO, T. I., ARESHIDZE, I. V., GREN, T. A. and SEVASTYANOV, O. V., Physical Chemical Institute, Ukrainian SSR Academy of Sciences, Odessa

[Abstract] Polyacrylamid gel immobilization of the enzyme preparation pectawamorin was carried out to prepare a cheap and stable form of the catalyst. Pectinesterase and polygalacturonase activity of the immobilized agent, as well as its stability in storage, are tabulated. Eighty to ninety percent of the enzyme can be immobilized by the procedure, with retention of 55% of its activity. The agent remains stable on storage, with some increase shown in its pectinesterase activity. Figure 1; references 12: 4 Russian, 8 Western. [39-8586]

## CATALYTIC PROPERTIES OF CHOLINESTERASES IN THE OPTIC GANGLION OF OCTOPI

Leningrad FIZIOLOGIYA I BIOKIMIYA MORSKIKH I PRESNOVODNYKH ZHIVOTNYKH (Supplement--1978--to ZHURNAL EVOLYUTSIONNOY BIOKIMII I FIZIOLOGII) in Russian 1979 pp 194-204 manuscript received 15 Nov 77

GRIGOR'YEVA, G. M. and KONYCHEVA, N. V., Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, USSR Academy of Sciences, Leningrad

[Abstract] Homogenates from the optic ganglia of *S. oualaniensis* and *T. rhombus* octopi from the Indian Ocean, and *T. sagittatus* octopi from the South Atlantic, were diluted and the cholinesterase activity determined by potentiometer titration at a pH of 7.5 and temperature of 25°C. The substrata were commercial acetylcholine, propionylcholine, butyrylcholine, and a bromide of acetyl-beta-methylcholine. Various commercial inhibitors were used to determine the enzyme activity of the particular enzymes, and the sharp distinction in sensitivity to diisopropylfluorophosphate was used to determine the catalytic properties of acetyl cholinesterase and cholinesterase. Comparison of rates of hydrolysis indicated the latter enzyme to be the secondary enzyme in the octopus optic ganglia. Specific values of enzyme activity for all variants are presented. Figures 2; references 27: 15 Russian, 12 Western. [26-12131]

USSR

UDC 612.111 + 612.325 + 616.033

SOME FORMS OF ADAPTATION TO EXTREME CONDITIONS BY THE BLOOD SYSTEM

Kiev FIZIOLOGICHESKIY ZHURNAL in Russian Vol 25 No 3, May/Jun 79 pp 227-234  
manuscript received 10 Jul 1978

TROITSKAYA, N. A., KOBOZEV, G. V., GONCHAROVA, YE. I. and KAMINSKAYA, G. A.,  
Department of Physiology and the Department of General Chemistry, Crimean  
Medical Institute

[Abstract] The circulatory dynamics of rabbits were studied for 10 days, then 40% of their blood was removed and the restorative function studied for 30 days by measuring the quantity of hemoglobin and the number of erythrocytes, total protein, and spectral features of the hemoglobin. Electrophoresis in polyacrylamide gel was used to measure qualitative changes in the hemoglobin and plasma protein. Three phases were observed in the regeneration process, the first bringing restoration of blood pressure, the second a return toward normal hemoglobin and erythrocyte quantities and protein synthesis, and the third, return to normal and even higher red blood parameters. Figures 3; references 14: 9 Russian, 5 Western.  
[24-12131]

USSR

UDC 615.361.014.41.07

METABOLIC CONDITION OF DONOR HEARTS IN THE PRETRANSPLANTATION PERIOD

Kiev FIZIOLOGICHESKIY ZHURNAL in Russian Vol 25 No 4, Jul/Aug 79 pp 431-437  
manuscript received 22 Jul 77

BARINOV, E. P., Donetsk Medical Institute

[Abstract] Metabolic evaluation was made of heart-lung preparations under conditions of 'adequate' and 'inadequate' perfusion since, in addition to immunologic factors, the physiological state of a donor heart also determines its subsequent function as a transplant. The results showed that under inadequate perfusion the heart continued to contract for 3-4 h in the heart-lung preparation (animal species not indicated--Abstractor), while with adequate perfusion the heart beats continued for 7-8 h. Inadequate perfusion during the period of 'preservation' was accompanied by decreasing myocardial concentrations of epinephrine, norepinephrine, ATP and glycogen, as well as depression of transaminase and lactate dehydrogenase activities in comparison with the values found for adequately perfused hearts. In addition, these changes were more pronounced in the right ventricle than in the left ventricle and were accompanied by a decrease in myocardial contractility and in the

initial intraventricular pressure. Certain in vitro indices were derived which suggested that donor hearts may be preserved for 2-5 h prior to transplantation. References 19: 1 Polish, 5 Western, 13 Russian.  
[561-12172]

USSR

UDC 576.311.2:578.08

POSSIBILITY OF REGULATING THE REPAIR ACTIVITY OF CELLS OF HIGHER ORGANISMS  
WITH THE HELP OF BIOLOGICAL FACTORS

Moscow ZHURNAL OBSHCHEY BIOLOGII in Russian No 4, 1979 pp 561-568 manuscript  
received 29 Nov 78

ZASUKHINA, G. D., SINEL'SHCHIKOVA, T. A., VASIL'YEVA, I. M. and KIRKOVA, Z. S.,  
Institute of General Genetics, USSR Academy of Sciences, Moscow

[Abstract] The mutagens ethylenimine and 4-nitroquinoline-1-oxide were used on cell cultures of rat embryos, mouse embryos, hamster kidneys, and chicken fibroblasts, as well as on human lymphocytes and swine kidney cells. The cultures were subjected to gamma- and ultra-violet radiation and exposed to the Kilham rat virus. Then the effects on DNA tearing and repair were measured and processed statistically. The various tissue cultures were rated according to sensitivity to ion radiation and resistance to 4-nitroquinoline-1-oxide, and the ability to form DNA tears. The degree of DNA degradation depended on the cell type, the mutagen dosage and, to a lesser degree, the length of treatment. Latent and chronic infection by Kilham's virus did not affect the repair process of gamma-radiation induced damage, but did promote repair of the cells in the 4-nitroquinoline-1-oxide variant, with ultraviolet radiation. Use of interferon as a protective agent had the advantage of being a natural cell product that was harmless to the organism, and has high prospects for increasing resistance to various exogenous phenomena. Figures 5; references 15: 4 Russian, 11 Western.

005/12131

USSR

UDC 577.156

IMMOBILIZATION OF THE AMINOPEPTIDASE OF ASPERGILLUS ORYZAE ON ORGANIC AND INORGANIC CARRIERS

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 350-354  
manuscript received 5 Feb 79

KOLODZEYSKAYA, M. V., LOSEVA, A. L. and VERBILENKO, S. V., Institute of Biochemistry imeni A. V. Palladin, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] Aminopeptidase of *Asp. oryzae* was immobilized on aminoethyl cellulose with a glutaric aldehyde activator, and on sephadex G-200 and sepharose 4B using cyanogen bromide. Sylochromes and silica gel served as inorganic carriers, with titanium tetrachloride as the activator. With leucyl-glycyl-glycine as the substrate, temperature and pH properties of the fixed aminopeptidase were studied. Best yields came using sephadex G-200, where 40% of the protein was immobilized. The optimum temperature was 60° C with all carriers but the AE-cellulose, where it was 50° C. For most variants the pH optimum was 8.0, but with the sephadex G-200 the pH optimum moved to pH 9.0. The sephadex G-200 was regarded as the best carrier in terms of activity and temperature and pH stability. Figures 4; references 18 (Western).

11/12131

USSR

UDC 577.15

STUDY OF THE ROLE OF THE MOLECULAR ENVIRONMENT IN CHLOROPHYLLASE FUNCTIONING DURING ITS IMMOBILIZATION ON ORGANIC CARRIERS

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 404-408  
manuscript received 5 Feb 79

SUD'INA, YE. G., SAMARTSEV, M. A., COLOD, M. G. and DOVBYSH, YE. P., Institute of Botany imeni N. G. Kholodnyy, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] Chlorophyllase was immobilized on aminohexadecyl sepharose, amino-undecyl sepharose and heptyl sepharose, and the enzyme's activity was measured in a 40% acetone solution. The chlorophyllase was best buffered against inactivation on the most hydrophobic carrier, aminohexadecyl sepharose. Covalent bonding of chlorophyllase with sepharose activated by cyanogen bromide preceded fixing on one carrier with diethylamine and on another with dodecylamine. The former provided much greater stability as well as better activation of the chlorophyllase. References 12: 2 Russian, 6 Ukrainian, 4 English.

11/12131



USSR

**STUDIES OF SORPTION AND INTERACTION OF CHLOROPHYLL AND CHLOROPHYLLASE ON METHYLAEROSIL**

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 400-403

SUD'INA, YE. G. and GOLOD, M. G., The N. G. Kholodnyy Institute of Botany Academy of Sciences of the Ukrainian SSR, Kiev

[Abstract] Methylaerosil AM-1, which has hydrophobic properties, was used as an inorganic carrier for chlorophyllase from sugar beet leaves. Chlorophyll was immobilized analogously in a 40% acetone solution. Results indicated that the most active chlorophyllase reaction occurred when both components were in suspension. The hydrophobic bonding of chlorophyll with methylaerosil brought markedly reduced hydrolysis. References 12: 11 Russian, 1 English.

11/12131

USSR

UDC 577.156.6.072:543.544

**AFFINED SORBENTS FOR OBTAINING PLASMINOGEN**

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 330-334  
manuscript received 15 Feb 79

KUDINOV, S. A., YERETSKAYA, YE. V., POZDNYAKOVA, T. M., PANCHENKO, N. YE., MATSUY, S. P. and BABENKO, I. M., Institute of Biochemistry imeni A. V. Palladin, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] Affined sorbents were obtained by immobilizing l-lysine on cellulose and carboxymethyl-cellulose, which were activated respectively by cyanogen bromide and dicyclohexyl carboxyimide. The yield was measured by chromatography, and electrophoresis was used to determine the molecular mass of plasminogen with protein markers from bovine serum albumin, egg albumin, carboxypeptidase and chymotrypsinogen. Results indicated that the affine volume of the sorbent was related to physical and chemical properties as well as to the quantity of bound ligand matrix. The yield and activity of plasminogen obtained using celluloses was equal to these values when sepharose was used, and the cellulose base was not subject to shrinkage or aging. Regeneration of the sorbents was another advantage of the cellulose sorbents. Figure 1; references 16: 1 Russian, 15 Western.

11/12131

USSR

UDC 577.156.6.072:543.544

ACTIVIZING PLASMINOGEN USING IMMOBILIZED TRYPSIN

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 335-339  
manuscript received 5 Feb 79

YERETSKAYA, YE. V. and KUDINOV, S. A., Institute of Biochemistry imeni A. V. Palladin, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] To obtain plasmin compounds without activator residue, cyanogen bromide was used to activate sepharose, which was then used to obtain plasminogen from placenta serum via affinity chromatography. Temperature and pH factors were controlled in the procedures for activating the plasminogen. Results indicated that the best conditions for transforming the proenzyme into plasmin were a pH value of 7.0-7.1, temperature of 30° C, and the presence of 25% glycerine. Figures 6; references 10: 1 Russian, 9 Western.

USSR

UDC 577.156.6.072:543.544

ACTIVATION OF PLASMINOGEN WHEN IMMOBILIZED

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 340-344  
manuscript received 5 Feb 79

KUDINOV, S. A. and YERETSKAYA, YE. V., Institute of Biochemistry imeni A. V. Palladin, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] Plasminogen was immobilized on sepharose-2B and cellulose activated cyanogen bromide, and on aminoethyl cellulose by glutaric aldehyde. Then protein content and activity were determined, the latter by a caseinolytic method with streptokinase as the activator. In quantitative terms all the methods used yielded similar amounts. The glutaric aldehyde method showed a spontaneous proteolytic activity, and was not activated by streptokinase. Plasminogen immobilized using cyanogen bromide retained the ability of activation by streptokinase. The transformation of plasminogen into a plasmin-like state when immobilized on aminoethyl cellulose using glutaric aldehyde suggests conformational changes related to activation of the proenzyme without hydrolysis of the peptide bond. Figures 2; references 12: 2 Russian, 10 Western.

11/12131

USSR

UDC 578.085.23:577.156.1:678.664

**EFFECT OF TRYPSIN IMMOBILIZED ON POLYURETHANE SUBSTRATA ON THE GROWTH OF RAT FIBROBLASTS IN TISSUE CULTURES**

Kiev UKRAINSKIY BIOKHIMICHESKIY ZHURNAL in Russian No 4, 1979 pp 355-362  
manuscript received 5 Feb 79

PKHAKADZE, G. A., GALATENKO, N. A., LIPATOVA, T. E., YATSENKO, V. P. and KONOPLITSKAYA, K. L., Institute of Organic Chemistry, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] The effect of various porous polyurethane substrata containing adsorbed and chemically bound trypsin was tested to determine the potential of the method for evaluating the biocompatibility of polymers, as well as the effects of trypsin. Control cultures utilized the polyurethane substrata without trypsin. Results indicated that the chemically bound trypsin stimulated the division of fibroblast elements, and contributed to the subsequent degeneration of cell elements. When the trypsin was adsorbed to the surface, cell growth was inhibited. Figures 6; references 10: 2 Russian, 1 Ukrainian, 7 Western.

11/12131

USSR

UDC 577.158

**IMMOBILIZATION OF GLUCOSE OXIDASE OF PENICILLIUM VITALE ON AMINOSYLOCHROME AND THE PROPERTIES OF THE IMMOBILIZED ENZYME**

Kiev UKRAINSKIY BIOKHIMICHESKIY ZHURNAL in Russian No 4, 1979 pp 363-368  
manuscript received 5 Feb 79

DEGTYAR', R. G. and GULYY, M. F., Institute of Biochemistry imeni A. V. Palladin, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] Commercial and laboratory glucose oxidase was immobilized on aminosylochrome, then oxidation and measurement procedures were conducted. An inverse relationship was observed within definite limits between the quantity of immobilized enzyme and the level of enzyme activity. The immobilized glucose oxidase was relatively more stable than the labilizing fraction, and the immobilized enzyme had greater pH- and temperature stability, while retaining catalytic capacity. Figures 5; references 23: 10 Russian, 13 Western.

11/12131

## PROPERTIES OF AMYLASE IMMOBILIZED ON AEROSIL DERIVATIVES

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 369-373  
manuscript received 5 Feb 79

KOLESNIK, L. A., GALICH, I. P. and KOVAL'CHUK, T. A., Institute of Biochemistry imeni A. V. Palladin, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] *Asp. oryzae* amylase preparations were immobilized on aminoaerosil and carboxyaerosil carriers, with N,N'-dicyclohexylcarbodiimide as the bonding agent. Then pH activity and stability were measured, and the temperature stability was determined. A shift toward the alkaline range was typical for the immobilized amylase. The best stability was found in preparations obtained using, 2,4-toluylenediisocyanate, and these were more stable than the enzyme in solution. The best activity was observed in preparations preserved in a thick suspension containing no less than 65-70% liquid. Figures 4; references 18: 7 Russian, 5 Ukrainian, 6 Western.

11/12131

## IMMOBILIZATION OF THE ENZYME PREPARATION AMYLOSUBTILIN G10x ON SYLOCHROME

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 374-377  
manuscript received 5 Feb 79

YEL'CHITS, S. V., YANISHPOL'SKIY, V. V., ABAINOVA, M. B. and ZATORSKAYA, Kiev Technological Institute for the Food Industry, Ukrainian SSR Ministry of Higher and Secondary Special Education, Kiev; Institute of Physical Chemistry imeni L. V. Pisarshevskiy, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] Amylosubtilin G10x was immobilized by treating sylochrome S-80 with gamma-aminopropyltriethoxysilane, and then 2,4-toluylenediisocyanate or cyanogen chloride. The quantity immobilized was found to increase when the reaction was continued for 2 hours, although the reaction was 90% complete in 1 hour. The 2,4-toluylenediisocyanate was a more effective activator than cyanogen chloride, but brought a decrease in the temperature stability. Figures 3; references 5: 4 Russian, 1 English.

11/12131



USSR

UDC 577.154

USING THE IMMOBILIZED MICROSOMAL FRACTION OF ANIMAL LIVERS FOR THE CONVERSION REACTION OF 1,4-BENZDIAZEPINE-2-ONES

Kiev UKRAINSKIY BIOKHIMICHESKIY ZHURNAL in Russian No 4, 1979 pp 382-386  
manuscript received 5 Feb 79

BOGATSKIY, A. V., DAVIDENKO, T. I. and SEVAST'YANOV, O. V., Physicochemical Institute, Ukrainian SSR Academy of Sciences, Odessa

[Abstract] Microsomal fractions of the livers of Wistar albino rats and chinchilla rabbits were immobilized in polyacrylamide gel, then used to catalyze 3-acetoxy derivatives of 1,4-benzdiazepine-2-ones, to cause hydroxylation and reduction of nitrazepam. The inorganic matrix was sylochrome. Measurements showed that the esterase activity of the immobilized preparations using 2,4-toluylenediisocyanate was greater and more stable than these properties in the original enzymes. After 10 days of storage the stability of the preparation decreased to only 5%. Figure 1; references 11: 3 Russian, 1 Ukrainian, 7 Western.

11/12131

USSR

UDC 541.183.4:577.156.3

TRYPSIN IMMOBILIZATION ON ORGANOSILICA SURFACES

Kiev UKRAINSKIY BIOKHIMICHESKIY ZHURNAL in Russian No 4, 1979 pp 324-329  
manuscript received 5 Feb 79

YANISHPOL'SKIY, V. V., TERTYKH, V. A. and LYUBINSKIY, G. V., Institute of Physical Chemistry imeni L. V. Pisarzhevskiy, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] Cyanuric chloride and maleic anhydride were used to fix trypsin on various sylochrome surfaces. The activity of trypsin in solution and of immobilized trypsin was determined, then the trypsin was immobilized on organosilicas with surface anhydride groups. Measurement of the rate of immobilization indicated that the reaction took place in 30 minutes at 22° C on the anhydride sylochrome, while it took 60 minutes on aminoorganic sylochrome. Greater stability was observed in the trypsin immobilized on the latter organosilica. The anhydride-silica immobilized trypsin was shown to be 20 times more stable than trypsin in solution. Figures 2; references 17: 11 Russian, 6 Western.

11/12131

USSR

UDC 577.156.1:678.664

PRODUCTION AND PROPERTIES OF TRYPSIN IMMOBILIZED ON A POLYURETHANE MATRIX

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 319-323  
manuscript received 5 Feb 79

LIPATOVA, T. E., KONOPLITSKAYA, K. L., CHUPRINA, L. N. and VASIL'CHENKO, D. V., Institute of Organic Chemistry, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] Trypsin was immobilized on the matrix using a mix of toluylenediisocyanate and polyoxypropyleneglycol, in the first test method, and, also, using the trypsin prepolymer after first dissolving it in 0.1 ml of distilled water. The amount of enzyme immobilized was measured on the basis of the difference between the amount in the starting mix and that in the solutions used for washing off unbound protein. Results indicated that the trypsin activity of bound trypsin, compared to native trypsin, was less than the activity of the original compounds, amounting to 2.5-4.5% for protamine, 2-3% for hemoglobin, and 3.5-5% for casein. An increase in the immobilized trypsin on the carrier led to decreased enzyme activity. Figures 3; references 20: 8 Russian, 12 Western.

11/12131

USSR

UDC 577.154

IMMOBILIZATION OF E AND P PRONASES ON AN ORGANIC AMINOSILICA SURFACE

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 315-318  
manuscript received 5 Feb 79

BOGATSKIY, A. V., DAVIDENKO, T. I., CHUYENKO, A. V., YANISHPOL'SKIY, V. V., TERTYKH, V. A. and CHUYKO, A. A., Physical Chemistry Institute, Ukrainian SSR Academy of Sciences, Odessa; Institute of Physical Chemistry, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] Cyanogen chloride, 2,4-toluylenediisocyanate, and glutaric aldehyde were used to immobilize the E and P pronase on sylochrome modified by gamma-aminopropyltriethoxysilane, and titanium tetrachloride was used to activate immobilization on unaltered sylochrome. Esterase and caseinolytic activity of the immobilized enzymes, and their stability, were determined. Optimum caseinolytic activity was obtained using titanium tetrachloride, and the lowest result using 2,4-toluylenediisocyanate. Esterase activity was also far lower with the latter activator but it yielded the most stable compounds.

The most promising compounds in fixing pronase E on sylochrome in terms of activity and temperature stability were cyanogen chloride and titanium tetrachloride. References 11: 6 Russian, 5 Western.

11/12131

USSR

UDC 615.385.1.014.413

CRYOPRESERVATION OF ERYTHROCYTES FOR SEROLOGICAL REACTION TESTS

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 79 pp 435-437 manuscript received 3 Apr 78

GUDKOV, V. G., FEL'DMAN, E. V., MARCOLIN, A. Z. and TOLOCHKO, G. V., Belorussian Scientific Research Institute of Epidemiology and Microbiology; Belorussian Scientific Research Institute of Blood Transfusion, Minsk

[Abstract] Reference is made to inadequacies of erythrocyte stabilization with chemical preservatives (short periods of storage, difficult procedures) and with drying (need for special apparatus). Success in use, in clinical hematology, of erythrocytes preserved by freezing in liquid nitrogen suggested use of this technique for preparation of erythrocytes for use in serology tests. In the present article use is reported of cryopreservation ( $-196^{\circ}\text{C}$ ) by an adapted method (Soviet references, 1969). *Macacus rhesus* blood was employed. Hemagglutination and hemagglutination inhibition tests with measles antigen and measles gamma globulin were equivalent for normal and preserved erythrocytes. The cryoprotective solution, TsOLIPK-114, consisted of mannite, 40 g; NaCl, 7 g; glycerin, 300 g; double distilled water, up to 1 liter. References 10: 9 Russian, 1 Western.  
[34-8586]



USSR/USA

UDC 576.858.75.095.38:599.4(574)

**ISOLATION OF STRAINS OF INFLUENZA VIRUS OF THE HONG KONG COMPLEX (H3N2)  
FROM NYCTALUS NOCTULA BATS IN KAZAKHSTAN**

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 79 pp 338-341 manuscript received 19 Jul 78

L'VOV, D. K., EASTERDAY, B., HINSHAW, V., DANDUROV, YU. V., deceased, ARKHIPOV, P. N., BRAUDE, N. A., PODCHERNYAYEVA, R. YA., MYASHNIKOVA, I. A., SMESHKO, O. V. and KOVTUNENKO, N. G., Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow; Department of Veterinary Sciences, University of Wisconsin, Madison (USA); St. Jude's Pediatric Research Hospital, Memphis (USA)

[Abstract] The strains from the bats were obtained in 1976 in Alma Ata from mixed pools of lung and trachea tissues. Standard strains employed in the isolation and the extensive influenza virus reference sera are listed. Antigenic relations of the strains isolated from the bats are chartered; four antigenically related hemagglutinating agents were isolated from the bat tissue pools and were identified. Close relation to A/Port Chambers/73 virus was found. Figure 1; references 9: 4 Russian, 5 Western.  
[34-8586]

USSR

UDC 576.858.13.01

**POSSIBLE MECHANISM OF PRESERVATION OF CERTAIN ORTHOPOX VIRUSES IN NATURE**

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 79 pp 368-372 manuscript received 8 Dec 78

SHELUKHINA, E. M., SHENKMAN, L. S., ROZINA, E. E. and MARENNIKOVA, S. S., Moscow Scientific Research Institute of Virus Preparations, USSR Ministry of Health

[Abstract] Viruses studied were monkey pox of reference strain Copenhagen, cow pox of reference strain Brighton and white rat pox strain 012-M-73 (V. A. Krikun, 1974). Trials were done on hamsters (monkey pox), cotton rats (cowpox) and white rats (ratpox and cowpox). Results showed persistence of orthopox viruses in the animal up to six weeks. It can occur in the absence of external symptoms of infection; this phenomenon had been earlier reported only with ectromelia virus (Gladhill, 1962; Christensen, et al, 1966). It is suggested that asymptomatic persistence of the viruses tested can occur. Figure 1; references 13: 8 Russian, 5 Western.  
[34-8586]

USSR

UDC 616.935:313.13:613.13 (470.67)

SOME PROBLEMS OF SEASONALITY OF BACTERIAL DYSENTERY IN ASSR DAGESTAN

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 8, 1979 pp 98-103 manuscript received 14 Apr 78

SULTANOV, G. V., Dagestan Medical Institute

[Abstract] Analyses conducted in Dagestan from 1959-1973 showed a high incidence of bacterial dysentery morbidity in both cities and rural areas throughout the year. Monthly distribution of dysentery was highlighted everywhere by the shift of the morbidity peak from August to September-October and to November in certain years. The return of children to collectives from summer camps and their admission to creches, nurseries and kindergartens increased morbidity. Morbidity increase also correlated with the fact that August-September is the bathing and fruit harvesting season and resulting inadequacies of sanitation and hygiene due to the acute water shortage. Morbidity increases in July, August and September were due to the addition of the seasonal factors being added to the constantly acting factors. References 8 (Russian). [19-2791]

USSR

UDC 576.895.775:599.3(571.61)

FLEAS ON SMALL MAMMALS OF NORTHERN AMURSKAYA OBLAST AND THEIR DISTRIBUTION BY BIOTOPES (APHANIPTERA)

Leningrad PARAZITOLOGIYA in Russian No 4, 1979 pp 407-413

KRYLOV, D. G. and KRYLOVA, T. V., Moscow State University

[Abstract] Between 15 June and 10 September 1975 six research associates and two students conducted an expeditionary study of parasites on small mammals in a previously unstudied region, the north slope of the Stanovoy Range in northern Amurskaya Oblast. The elevations studied were 800-1,200 m with willow-poplar vegetation on the floodplains, a birch-larch community ringing the low-lying areas, and solid larch taiga over the remainder of the land. The major railroad project, the Baikal-Amur Mainline, passes through this region. There proved to be four common species, two of which, *Ceratophyllus penicilliger* and *Catallagia dacenoi* live both on the taiga slopes and floodplains, while one, *C. advenarius*, prefers marshy areas, and the fourth, *Catallagia ioffi*, inhabits higher elevations exclusively. Several other species found are considered to rely on the marshes and floodplains (C.

calcarifer, *C. taiganus*, *Amphipsylla marikovskii*, *Doratopsylla birulai*, and *Neopsylla acanthina*). Two species, *Leptopsylla osteibirica* and *Rhadinopsylla pseudodahurica*, occurred chiefly in areas of Yeddo spruce. One specimen of *Tarsopsylla octodecimdentata* Kol. was taken in a floodplain larch grove. The principal hosts were voles and squirrels. References 13 (Russian).

USSR

UDC 576.895.775:591.1

# BLOOD DIGESTION AND FORMATION OF PLAGUE BLOCK IN THE FLEA CERATOPHYLLUS TESQUORUM

Leningrad PARAZITOLOGIYA in Russian No 4, 1979 pp 402-406

SHCHEDRIN, V. I., BKYUKHANOVA, L. V., OSIPOVA, S. P., LUNINA, YE. A. and SURKOVA, L. A., Scientific Research Institute of Plague Prevention of the Caucasus and Transcaucasus, Stavropol'

[Abstract] This communication gives results of a histological study of the digestion of blood and formation of a plague block in the digestive tract of *Ceratophyllus tesquorum* fleas, which are large-scale parasites on susliks in the plague focus of the Central Caucasus. The fleas were allowed to feed on susliks and, in some cases, white mice. They were contaminated with strains of plague microbe 1204D collected from *C. tesquorum* fleas in suslik dens near Mt. Elbrus. Temperatures of 13 and 18-20 degrees C. were used with humidity near 100 percent. It was found that *C. tesquorum* shows less marked coagulation of blood in the stomach than *Xenopsylla cheopis*, as well as more rapid hemolysis of erythrocytes. The differences were smaller for adult fleas. Histochemical analysis showed that the protease activity of the epithelium of the stomach and its contents in *C. tesquorum* fleas was much higher than for *X. cheopis*, but less than that for *Ctenophthalmus vladimiri*. The low frequency of block formation in *C. tesquorum* and the long time required for it under these conditions appear to be related to the change in the number of plague microbes in the digestive tract of the fleas, less during hemolysis of erythrocytes and greater after its completion. Figure 1; references 11 (Russian).

## CREATIN OF THE ALL-UNION COORDINATION CENTER FOR TROPICAL DISEASES

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 3,  
May/Jun 79 p 89

NIKOLAYEVSKIY, G. P.

[Abstract] Resolution No. 373 of the USSR Ministry of Health, dated 25 Apr 1977, "On the Coordination of Scientific Research on Tropical Medicine" has resulted in the creation, in September of 1978, of the All-Union Coordination Center for Tropical Diseases. The Center has been created at the Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martainovskiy, and is headed by Professor F. F. Soprunov. The Center coordinates its activity with the problems commission on "parasitic tropical diseases" of the USSR Academy of Medical Sciences. The primary tasks of the Center include expansion of the coordination of scientific research in the USSR on the basic parasitic tropical diseases within the framework of the special tropical program of WHO in the area of epidemiology, clinical aspects, immunology and immunoprophylaxis, chemotherapy and chemoprophylaxis, biology of parasites, biology of carriers and intermediate hosts, and field testing of methods of control of carriers. The Center is also responsible for cooperation with WHO and other foreign organizations, training of personnel, organization and conduct of international conferences, consultation on documentation and development of scientific themes for application for WHO grants.  
[663-6508]



USSR

UDC 576.858.095.33:  
576.895.42(677)

ISOLATION OF BHANJA VIRUS FROM HYALOMA PLUMBEUM IMPRESSUM TICKS IN SOMALI

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYY BOLEZNI in Russian No 3,  
May/Jun 79 pp 37-39 manuscript received 27 Sep 78

BUTENKO, A. M., GROMASHEVSKIY, V. L., L'VOV, D. K. and POPOV, V. F., Institute of Poliomyelitis and Viral Encephalitis, USSR Academy of Medical Sciences, Moscow; Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences; Scientific Research Institute of Standardization and Testing of Medical Biological Preparations imeni L. A. Tarasevich, USSR Ministry of Health, Moscow

[Abstract] A report is presented on the first case of isolation of the Bhanja virus from *Hyaloma Plumbeum Impressum* (a synonym for *H. rufipes*), collected in Somali. The materials were collected in 1974 in Somali by a group of specialists from the USSR Ministry of Health. Examination of 82 specimens produced a pathogenic agent which was then tested in mice. The results of cross experiments showed that the pathogen isolated from the ticks collected in Somali is no different in its antigenic characteristics from strains of Bhanja virus isolated in Nigeria and in the USSR. This finding greatly expands the known geographic area of distribution and ecologic connection with various species and genera of ixode ticks. References 10: 5 Russian, 5 Western.  
[663-6508]

USSR

UDC 616.988.25-022.  
395.42-036.22(571.1)

CHARACTERISTICS OF EPIDEMIC ACTIVITY OF FOCI OF TICK-BORNE ENCEPHALITIS IN OIL AND GAS REGIONS NEAR THE OB' (BASED ON AN EPIDEMIOLOGIC MODEL WITH IMMUNE LEVELS)

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 3,  
May/Jun 79 pp 16-20 manuscript received 24 Feb 78

GOL'DFARB, L. G., MYSKIN, A. A. and ANDREYEV, A. P., Institute of Poliomyelitis and Viral Encephalitis, USSR Academy of Medical Sciences, Moscow

[Abstract] An epidemiologic model of tick-borne encephalitis, created on the basis of studies performed in 1965-1970, then significantly improved, can be used to estimate the potential danger of infection and morbidity of tick-borne encephalitis in the area along the Ob' River, which is currently being populated

in connection with intensive oil and gas explorations. Testing of this model for agreement with the actual observed epidemic process in the area shows good agreement. The special 2-year test and the predicted level of morbidity based on the mathematical model both disagreed significantly with the officially recorded level of tick-borne encephalitis, however. The officially recorded level is approximately an order of magnitude lower than the level found in the experiment and predicted by the mathematical model. References 9 (Russian). [663-6508]

USSR

UDC 614.449.542:615.285.7.025.1]-036.8

SOURCES AND REGULARITIES IN RESTORATION OF THE POPULATION OF THE TAIGA TICK (IXODES PERSULCATUS, SHULZE, 1930) IN AREAS OF TICK-BORNE ENCEPHALITIS TREATED WITH DDT DUST

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 3, May/Jun 79 pp 9-16 manuscript received 24 May 78

KOROTKOV, YU. S. and CHUNIKHIN, S. P., Institute of Poliomyelitis and Viral Encephalitis, USSR Academy of Medical Sciences, Moscow

[Abstract] The source and patterns of restoration of the population of the Taiga tick in areas of tick-borne encephalitis in Southern Kemerovo Oblast after one-time treatment with 10% DDT dust are reported. Materials were collected in 1955-1977, with regular observations of the tick population in 7 areas, 6 of which were treated with DDT, while the 7th was a control. By the 3rd season after spraying, the tick population was so low that the methods of surveying used found no ticks at all in many areas. Depending on the distance from the areas sprayed, the time during which no ticks were observed varied from 1 to 4 years, the time then required for complete restoration of the tick population to its previous level--from 5 to 12 years. The measurements confirm the hypothesis that the population of *I. Persulcatus* in the treated regions drops below the subthreshold level immediately after spraying, so that the endogenous population falls to 0, and restoration of the population of ticks requires importation of ticks on animals entering from untreated regions. Figures 5; references 14 (Russian). [667-6508]

## EXPERIENCE IN SELECTION OF HARMLESS THERMOSENSITIVE RECOMBINANTS OF VIRUS GROUP A

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 79 pp 342-346 manuscript received 30 Jun 78

ALEKSANDROVA, G. I., GARMASHOVA, L. M., GOLUBEV, D. B., KOLYAK, L. I., MEDVEDEVA, T. YE., POLEZHAYEV, P. I., POLYAKOV, YU. M., RUMOVSKIY, V. I. and SMORODINTSEV, A. A., Institute of Experimental Medicine, USSR Academy of Medical Sciences; All-Union Scientific Research Institute of Influenza, USSR Ministry of Health, Leningrad

[Abstract] One method of creation of safe vaccines has involved crossing of threatening virulent viruses with a donor of attenuation--the recombinant virus being used as the vaccine in the threatened population. Promising donors include thermosensitive strains produced under the action of chemical mutants or in passage at low temperatures (Beare, 1975; Aleksandrova, 1977, 1965; Naasab, 1972). In the present report, the value of using, as the donor, cold-adapted vaccine strains of influenza A is demonstrated. The work used, as donors, old vaccine strains of A/Leningrad/134/17/57 (H2N2) and A/Leningrad/937/4/46 (H1N1) which had been obtained after 17 and 37 passages at 25°C. The virulent viruses were A (H3N2), A/Victoria/35/72, A/Leningrad/5/73, A/Leningrad/538/74, A/Victoria/3/75 and A/Leningrad/82/76. A chart of the biological properties of the recombinant strains of Group A viruses is presented (recombination procedure, in chick embryos, is given in detail), as well as reactogenicity and immunogenicity of the recombinants. Vaccines with complete safety were obtained. References 9: 3 Russian, 6 Western (3 by Soviet authors). [34-8586]

USSR

UDC 616.988.75A-085.281.8-039.71

**STUDY OF THE PROTECTIVE ACTION OF REMANTADINE DURING AN INFLUENZA OUTBREAK  
IN DECEMBER 1977 DUE TO INFLUENZA A (H1N1) VIRUS**

Moscow VOPROSY VIROLOGII in Russian No 4, Jul/Aug 79 pp 353-357 manuscript  
received 19 Jul 78

OBROSOVA-SEROVA, N. P., SLEPUSHKIN, A. N., KUPRYASHINA, L. M., VOLKOV, V. YE.,  
PUGAYEVA, V. P., RYKHLETSKAYA, N. S., CHERNETSOV, YU. V., SHTUNDERENKO, G. V.  
and GOL'DENBERG, B. I., Institute of Virology imeni D. I. Ivanovskiy, USSR  
Academy of Medical Sciences, Moscow

[Abstract] The prophylactic action of remantadine was tested in the 1977-1978  
epidemic season on a group of 18-23 year old subjects, apparently students.  
Some of the subjects also received intranasal application of A/Leningrad/82/76  
influenza vaccine strain (H3N2). Tabulated data indicated a positive prophyl-  
axis of remantadine against the epidemic virus H1N1, decreasing incidence by a  
factor of 1.5. The use of combined remantadine and H3N2 was even more success-  
ful and is attributed to the induction of interferon by the influenza vaccine.  
References 6: 5 Russian, 1 Western (by the Soviet Smorodintsev, et al, 1970).  
[34-8586]

USSR

UDC 615.371:576.858.13].065.07

**USE OF ANAPHYLAXIS FOR EVALUATING REACTOGENICITY OF PRODUCTION STRAINS AND  
BATCHES OF VACCINE VIRUS**

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 8,  
1979 pp 14-16 manuscript received 14 Sep 78

VOROB'YEV, A. A., AFANAS'YEV, S. S., PATRIKEYEV, G. T., PODKUYKO, V. N. and  
PASHANINA, T. P.

[Abstract] Anaphylaxis in guinea pigs was employed in a comparison of reacto-  
genicity of commercial vaccines L-IVP, B-51 and EM-63. The greatest reacto-  
genicity was shown from strain L-IVP and the least from strain EM-63 with  
strain B-51 in the intermediate position. The degree of pronouncement of al-  
lergization depended also upon the production batches of vaccines. The authors  
detail the materials and methods used:

[Text] We compared the following commercial vaccines: from strain L-IVP  
(series No. 0206, control number 2774, in an ampule of 20 cutaneous doses--  
Moscow Institute of Virus Preparations); from strain B-51 (series No. 307,



control number 1965, in an ampule of 10 cutaneous doses--Odessa Institute of Vaccines and Serums); from strain EM-63 (series No. 152, control number 2218, in an ampule of 10 cutaneous doses--Tomsk Institute of Vaccines and Serums); from strain EM-63 (series No. 594, control number 2474 in an ampule of 10 cutaneous doses--Tashkent Institute of Vaccines and Serums). The vaccines studied were produced by cultivation of strains on the skin of a calf. Strains from which they were prepared differed in some biological and genetic properties and the degree of reactogenicity, revealed after immunization of people and in experiments on animals /9, 10/. Experiments were performed on 260 guinea pigs of both sexes weighing from 250-300 g. Animals were vaccinated intracutaneously on the side of the trunk with a dose of  $10^{6,3}$  OOE in a 0.1 ml volume. References 11.  
[19-2791]

USSR

UDC 616.981.551-097.3-078

#### DETECTION OF TETANUS ANTITOXIN WITH THE HELP OF ENZYME-LABELLED ANTIBODIES REACTION

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 8, 1979 pp 47-50 manuscript received 23 Jun 78

BOCHAROVA, N. G., BYCHENKO, B. D., LYSENKO, A. YA., YERMOLIN, G. A., TSVETKOV, V. S., KURDINA, D. S. and YEGOROVA, G. K., State Scientific Research Institute of Standardization and Control of Medical Biological Preparations imeni Tarashevich, Central Institute for the Advanced Training of Physicians, Moscow

[Abstract] Serum from 100 wounded persons was used for detection of tetanus antitoxin by the use of the enzyme-labelled antibodies test (known outside the Soviet Union as the enzyme-linked immunosorbent assay). Visual study by this method showed titers of antitoxin ranging from 1:10 up to 1:10, 240. Simultaneous study of all the serums by this method and by the indirect hemagglutination reaction method indicated both tests were suitable for detecting tetanus antitoxin in the serum since the coefficient of conjugability equalled  $\pm 0.1$ . The enzyme-labelled antibodies test was found to be highly sensitive, simple and capable of good reproducibility, with failure to detect antitoxin in only 7 of the 100 serums studied.  
[19-2791]

EFFECT OF A HIGH-POLYMER METAL-CONTAINING BIOSTIMULATOR ON THE IMMUNOLOGICAL REACTIVITY OF THE BODY OF EXPERIMENTAL ANIMALS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 8, 1979 pp 58-82 manuscript received 4 May 78

BESKROVNYI, A. M., KULAKOVA, G. S., LYSENKO, A. I., SUKACHEVA, O. A. and CHERNYAVSKIY, V. I., Khar'kov Institute of General and Emergency Surgery and the Khar'kov Institute of Microbiology, Vaccines and Serums imeni Mechnikov

[Abstract] BALB/c and (CBA X C57BL)F<sub>1</sub>, white non-pedigree mice and Chinchilla rabbits were used in an experimental study of the effect of "Phodomos," a biostimulator of the "Biomos" group of metal complexes on production of antibodies, phagocytic activity of microphages and macrophages and the capacity of bone marrow stem cells to form colonies. The study showed the preparation increased (2-3-fold in the experimental animals) production of antibodies and phagocytic capacity of microphages and macrophages, producing the immunological reaction upon enteral, parenteral and external use. Intraperitoneal injection was ineffective. References 13 (Russian).

[19-2791]

USSR

UDC 577.156+577.150

IMMOBILIZATION OF GLUCOAMYLASE AND ACID PROTEINASE ON MODIFIED SILOCHROME WITH THE USE OF N-CARBETHOXY-2-ETHOXY-1,2-DIHYDROQUINOLINE

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 15 No 5, Sep/Oct 79 pp 744-746 manuscript received 28 Nov 78

BORISOVA, V. N., LOMAKO, O. V., MOTINA, L. I. and NAKHAPETYAN, L. A., All-Union Scientific Research Biotechnical Institute, Moscow

[Abstract] The N-carbethoxy-2-ethoxy-1,2-dihydroquinoline used was synthesized by a method described by Fieser and Fieser (1971). The carrier used was modified silochrome C-80, pore diameter 400 to 600 Å, specific surface 80 m<sup>2</sup>/g. Carboxyl group content of the carrier was 0.15-0.20 mg equiv/g. The glucoamylase had been prepared from *Endomycopsis bispora* (East Germany); highly-purified protavamorin G25x, from *Aspergillus awamori*, strain 16, was used. The Sandaram immobilization method (1974) was used. The maximum percent of protein binding for the glucoamylase was 46.0 and for the acid proteinase, 35. The latter showed loss in activity. References 7: 1 Russian, 6 Western. [39-8586]

USSR

UDC 576.8:621.039.85

ROLE OF SURFACTANTS IN YEAST CULTIVATION PROCESSES ON MEDIA WITH N-ALKANES

Moscow IZVESTIYA TIMIRYAZEVSКОЙ SEL'SKOKHOZYAYSTVENNOY AKADEMII in Russian No 3, 1979 pp 3-8 manuscript received 26 Sep 78

MELENT'YEV, A. I., Chair of Applied Atomic Physics and Radiochemistry

[Abstract] Nonionogenic surfactants, tween 80 [polyoxyethylene-(20-sorbitan monooleate, i.e., polysorbate 80], span 80 (sorbitan monooleate), ferman (block copolymer of ethylene oxide and propylene oxide, 22:17) and proxanol (block copolymer of ethylene oxide and propylene oxide, 60:40) were used in a culture of *Candida guilliermondii* yeast maintained on wart-agar medium after preadaptation to n-alkanes. The concept of hydrophil-lyophil balance is applied to nonionogenic surfactants. The assumption that solubilization by surfactants or culture-producing substances is the first mandatory stage in assimilation of n-alkanes prompted investigation of a possible link between solubilizing action of surfactants and rate of their assimilation by microorganisms. Nonionogenic surfactants lower the rate of assimilation and oxidation of n-alkanes, as well as biomass increment, when there are no limitations on

oxygenation of cultures. Such surfactants may have a stimulating effect on yeast growth when there is oxygen limitation, by increasing sorption of oxygen by the medium. Figures 3; references 11: 3 Russian, 8 Western.

USSR

UDC 576.8.095

TRANSFORMATION OF NON-GROWTH SUBSTRATE BY IMMOBILIZED METHANE-OXIDIZING BACTERIA

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 393-399 manuscript received 5 Feb 79

SOKOLOV, I. G., MALASHENKO, YU. P., KARPENKO, V. I. and KRYSHTAB, T. P., Institute of Microbiology and Virology imeni D. K. Zabolotnyy, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] *Methylococcus thermophilus*, *Methylomonas rubra*, and *Methylosinus trichosporium* were used as the title bacteria. *Mc. thermophilus* was immobilized on agar gel and tested for methanol, acetaldehyde and ethanol by a gas chromatography method. Enzyme activity was measured in a non-cellular extract. Results indicated that in the presence of ethane and a substratum that can promote hydroxylation of ethane, the methane-oxidizing bacteria can grow on the ethane. Metabolic conjugation of  $C_1$ - and  $C_2$  compounds was observed, and biosynthetic processes involved derivatives of methanol (formaldehyde) as well as of ethane (acetic acid). Figures 3; references 16: 8 Russian, 8 Western. 11/12131



USSR

PROPERTIES OF IMMOBILIZED COMPLEXES OF STREPTOMYCES GRISEUS PROTEASES ON VARIOUS CARRIERS

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 345-349  
manuscript received 5 Feb 79

LOSEVA, A. L. and VERBYLENKO, S. V., Institute of Biochemistry imeni A. V. Palladin, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] Str. griseus proteases were immobilized on Sephadex G-200 and agarose by cyanogen bromide and on microcrystalline cellulose using  $TiCl_3$ . Protein content on the former was 5.5-6.5%, and on the latter, 2.5-3.0%. Proteinase activity of the immobilized complex in casein hydrolysis was from 7 to 14% of the activity of the original enzyme, apparently related to steric hindrance. The most stable preparations were obtained using the cyanogen bromide method on Sephadex G-200; these retained 70% of their original activity after 10 applications, and also provided pH activity and stability that was similar to the enzyme in solution. Figures 2; references 16: 5 Russian, 11 Western.

11/12131

USSR

UDC 577.154.2

METHOD FOR IMMOBILIZING ENZYME PREPARATIONS WHICH CATALYZE THE SPLITTING OF LOW-MOLECULAR SUBSTRATES

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 378-381  
manuscript received 5 Feb 79

YEL'CHITS, S. V., PICHKO, V. B., CHUGUY, V. A., TIKHOMIROVA, A. S. and SEROVA, YU. Z., Kiev Technological Institute for the Food Industry, Ukrainian SSR Ministry of Higher and Secondary Special Education, Kiev

[Abstract] Optimum conditions were sought for immobilizing enzymes by mechanical procedures involving the types beta-galactosidase and beta-fructofuranosidase, which were obtained from *Curcularia inequalis* and *Asp. awamori*, respectively. The first procedure involved application of an aqueous suspension on a solid carrier and drying, while the second method was to apply dry portions to a previously moistened carrier. Then the particles were coated with a film

that was impermeable for the enzymes. The mechanical procedures, of which the second was preferred, had the advantages of permitting the use of industrial enzymes without purification and the use of various enzymes and carriers. The possibility of industrial methods brought great reductions in cost. References 6: 5 Russian, 1 English.

11/12131

USSR

UDC 576.8.095

#### CATALYTIC PROPERTIES OF IMMOBILIZED CELLS OF METHANE-OXIDIZING BACTERIA

Kiev UKRAINISKIY BIOKHMICHESKIY ZHURNAL in Russian No 4, 1979 pp 387-392  
manuscript received 5 Feb 79

KAPPENKO, V. I., MALASHENKO, YU. P., YANISHPOL'SKIY, V. V. and TERTYKH, V. A.,  
Institute of Microbiology and Virology imeni D. K. Zabolotnyy, Ukrainian SSR  
Academy of Sciences; Institute of Physical Chemistry imeni L. V. Pisarshevskiy,  
Ukrainian SSR Academy of Sciences, Kiev

[Abstract] The methane-oxidizing culture *Methylobacterium rubra* was studied to determine the effects of immobilization and the possibility of developing stand devices for further study. The bacteria cells were immobilized in polyacrylamide gel and on sylochrome, then cell concentrations were measured by optical density. While 100% of the bacteria were immobilized in the gel, their respiratory activity ceased. On sylochrome S-80, covalent bonds were formed when both cyanogen chloride and isocyanate were used, and favorable catalytic properties were observed; the catalytic properties were best retained when isocyanate was used as the activator. Figures 4; references 8: 5 Russian, 1 Ukrainian, 2 Western.

11/12131

USSR

USE OF BACTERIA TO REMOVE CHROMIUM FROM INDUSTRIAL WASTE WATER

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 11 Oct 79 p 4

[Excerpt] Researchers of the Scientific Research Chemico-Technological Institute have found that certain types of microorganisms break down chromates and bichromates. The phenomenon, first discovered by Moscow area researchers, and then put into practice by their Yaroslavl colleagues at the Academy of Sciences Institute of Biology of Internal Waters, has resulted in the isolation (pure cultures) and study of bacterial strains capable of reducing chromium. The resulting sediment is easily removed. This method of purification is ten times less costing than using chemicals.

1840

USSR

UDC 576.858.25.098:541

## SOME PHYSICAL CHEMICAL PROPERTIES OF THE OKHOTSKSKIY VIRUS

Moscow VOPROSY VIROLOGII in Russian No 4, Jul/Aug 79 pp 372-377 manuscript received 1 Jun 78

SARKISYAN, B. G., NOVOKHATSKIY, A. S., BEREZINA, L. K. and L'VOV, D. K., Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow

[Abstract] Many arboviruses isolated in the USSR in recent years have had to be classified on the basis of their physical chemical properties. Such a virus is the Okhotskiy virus, isolated in 1970 from the *Ceratixodes putus* Rick. Camb tick in Sakhalin Oblast. The cited properties placed the agent in the Kemerovo group, genus Orbivirus, family Reoviridae. The present article cites the properties not previously studied for classification. The virus strain used was the LEIV-287 Ka, purified by differential centrifugation. Properties examined included buoyant density of virions in sucrose and cesium chloride gradients, radioactivity and sedimentation. The virus genome has a double-stranded RNA. Figures 9; references 13: 2 Russian, 11 Western (one by L'vov, et al). [34-8586]

USSR

UDC 576.858.25.097.21.095.162

## EFFECT OF EXTENDED PERIODS OF STORAGE ON INFECTIVITY OF LYOPHILIZED ARBOVIRUSES

Moscow VOPROSY VIROLOGII in Russian No 4, Jul/Aug 79 pp 432-435 manuscript received 23 Sep 78

SELEZNEVA, A. YU., NIKOLAYEVA, O. V. and FADEYEVA, L. L., Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow

[Abstract] Virus strains tested (alpha viruses, Japanese encephalitis, tick encephalitis, Bunyamver, arena) had been stored 8-21 years in the virus museum of the Ivanovskiy institute after lyophilization. Storage was at -20°C. The arboviruses were found to retain infectivity when stored in the lyophilized state under vacuum at -20°C. No serious loss of infectious titers occurred even where the initial virus material had been a 10% brain suspension in physiological solution without a filler. Charts display loss of infectivity over protracted times. Figure 1; references 7: 6 Russian, 1 Western. [34-8586]



USSR

UDC 576.858.097.22:615.28(048.8)

RESISTANCE OF VIRUSES TO CHEMICAL PREPARATIONS UNDER EXPERIMENTAL CONDITIONS  
AND IN CLINICAL PRACTICE

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 79 pp 323-328 manuscript  
received 2 Jun 78

CHIZHOV, N. P., Military Medical Academy imeni S. M. Kirov, Leningrad

[Abstract] The development and transmittal of resistance by viruses to chemotherapeutic agents is reviewed in detail on the basis of the literature, primarily of non-Soviet authors. Areas touched upon are appearance of resistance in RNA-containing viruses; resistance in DNA-containing viruses; and mechanism of formation of resistant mutants. Soviet authors cited include lavrov, et al, 1972, 1971; Podchernyayeva, 1971; Il'yenko, 1973, 1972; Balode, 1971; Chernos, et al, 1967, 1968; Gendon, 1967, 1974; and Sokolov, et al, 1973. References 70: 10 Russian, 60 Western.

[34-8586]

USSR

UDC 576.852.15:577.158:547.922

DECOMPOSITION OF HUMAN BLOOD CHOLESTEROL BY AN ENZYME PREPARATION FROM  
ACTINOMYCES LAVENDULAE

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 15 No 5, Sep/  
Oct 79 pp 715-718 manuscript received 10 Oct 78

IMSHENETSKIY, A. A., WIKITIN, L. YE., NAZAROVA, T. S., SHIRSHOVA, G. A. and  
MUNTYAN, L. N., Institute of Microbiology, USSR Academy of Sciences, Moscow

[Abstract] Imshenetskiy reported earlier on active cholesterol-decomposing enzyme systems derived from the Actinomyces (1977). In this work is reported the effect on human blood cholesterol of an enzyme preparation from the mycelium of Act. lavendulae, strain INMI-73. The blood sources were donor blood and specifically-drawn samples from healthy people. Incubation of the blood samples with the enzyme preparation at 37° yielded maximum decrease (30 to 40% of its initial level) in content of cholesterol in two hours. The preparation was effective against free cholesterol and did not act upon cholesterol esters. It is suggested that the preparation can be considered in a search for ways to lower human cholesterol levels. Figures 2; references 13: 5 Russian, 8 Western.

[39-8586]

## OXIDATION-REDUCTION REACTIONS DURING TRANSFORMATION OF HYDROCORTISONE AND PREDNISOLONE BY ADSORBED CELLS OF MYCOBACTERIUM GLOBIFORME, STRAIN 193

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 15 No 5, Sep/Oct 79 pp 645-653 manuscript received 8 Jan 79

KOSHCHENKO, K. A., AGRINBASAROV, A. YU. and SKRYABIN, G. K., Institute of Biochemistry and Physiology of Microorganisms, USSR Academy of Sciences, Pushchino

[Abstract] Cells of the title organism produce a number of enzymes. When these cells are adsorbed, they retain the capacity for 1,2-dehydrogenation and 20 beta-reduction. These enzymatic properties and the effect on them (in transformation of hydrocortisone and prednisolone) of various factors, e.g., pH, ion strength, temperature, rate of flow of substrate and cell concentration, were studied in the present work. The 1,2-dehydrogenation capacity is retained over a broad pH range, 4 to 9, temperatures from 5 to 50°, ion strengths from 0.03 to 6.0 and cell densities on the surface of the adsorbing carrier from 1.5 to 6 mg/g. Percent of conversion of hydrocortisone can be increased by selection of appropriate donor acceptors. The 1,2-dehydrogenation capacity of the adsorbed, immobilized cells does not differ from that of the natural cells. Prednisolone hydrogenation increases with rise in pH, temperature and lowered rate of flow of substrate. The reactions involved in the transformation reactions are discussed and outlined. The culture employed in this work was from the authors' institute collection. The carrier used was powdered cellulose TU-6-09-3575-74; chromatograph cellulose, PND-9303, LK microcrystalline cellulose (Chemapol, CSSR) and diethylaminoethylcellulose. Figures 9; references 19: 9 Russian, 10 Western (one by Skryabin, et al, in English).

[39-8586]

USSR

UDC 615.21.033:612.823.5(048.8)

**PRESYNAPTIC RECEPTORS AND ROLE THEREOF IN REGULATING NEUROMEDIATOR RELEASE AND EFFECTS OF NEUROPHARMACOLOGICAL AGENTS (LITERATURE SURVEY)**

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 42 No 5, Sep/Oct 79 pp 559-567

BONDARENKO, T. T., Laboratory of Psychopharmacology, Central Scientific Research Institute of Forensic Psychiatry imeni Prof V. P. Serbskiy, USSR Ministry of Health, Moscow

[Abstract] Numerous authors have demonstrated the existence of presynaptic receptors on nerve endings, and discussed their role in regulating neuromediator processes. Hypotheses have been expounded concerning mechanisms of negative feedback and positive feedback, the latter being triggered by activation of presynaptic beta adrenoreceptors, as well as a hypothesis concerning regulation of mediator discharge from noradrenergic nerve endings. The practical implications of presynaptic receptors are: such receptors can be the site of deregulation, as well as regulation; they may be the sites of action of neuropharmacological agents; they could mediate therapeutic and side effects of drugs; some behavioral effects could be attributed to alpha adrenergic presynaptic inhibition. Figures 3; references 145: 2 Russian, 143 Western.

USSR

UDC 615.214.2.065

**ACCUMULATION OF HOMOVANILIC ACID IN THE RAT BRAIN AS THE POSSIBLE CAUSE OF DEPRESSING EFFECT OF PSYCHOTROPIC AGENTS ON BEHAVIOR AND MOTOR ACTIVITY**

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 42 No 5, Sep/Oct 79 pp 467-470 manuscript received 17 Jul 78

ZHARKOVSKIY, A. M. and ALLIKMETS, L. KH., Chair of Pharmacology and Laboratory of Psychopharmacology, Tartu University

[Abstract] Experiments were conducted on rats to analyze the role of homovanilic acid in the depressing effect of neuroleptic agents (haloperidol and levomepromazine) on activity and behavior. Both agents induce catalepsy, but levomepromazine has a milder effect, as well as depression of orienting motor activity, associated with increase in homovanilic acid concentration in the prosencephalon. The latter was blocked with concurrent administration of apomorphine, a dopamine receptor stimulator. The combination of haloperidol and probenidol (Swedish product believed to retard transport of

acid metabolites of amines through the blood-brain barrier) enhanced the effect of haloperidol significantly. Levomepromazine with probenecid elicited relaxation of muscles and depression of spontaneous movement. Microinjections of homovanillic acid into the caudate nucleus induced severe inhibition of motor activity, like the neuroleptics, demonstrating that it too has neurotropic action. Figure 1; references 14: 2 Russian, 12 Western.



USSR

UDC 591.186:577.37:599.742.7

**ELECTROGRAPHIC CHANGES IN THE ISOLATED CORTEX OF A CAT UNDER THE INFLUENCE OF SLEEP NEUROPEPTIDE**

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 15 No 4, Jul/Aug 79 pp 430-433 manuscript received 7 Mar 79

BOGOSLOVSKIY, M. M., KARMANOVA, I. G., MAKSIMUK, V. F. and AL'BERTIN, S. V., Scientific Research Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad; Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, USSR Academy of Sciences, Leningrad; and Institute of Physiology imeni I. P. Pavlov, USSR Academy of Sciences, Leningrad

[Abstract] Experiments were conducted on mature cats of both sexes, isolating one hemisphere of the cortex by the Khananashvili method, then after 3-4 months attaching electrodes to the motor, parietal and visual areas of both sides, and to other nerve areas. Synthetic neuropeptide was injected suboccipitally and experiments conducted with a control group and dosages of 6-8 and 10-15 mkg/kg. Results indicated that the onset of slow wave sleep occurred in the isolated cortex from 0.2 to 1.5 seconds sooner than in the control hemisphere, with both dosages. The neuropeptide caused retardation of paradoxical sleep features in both intact and isolated cortex. Figure 1; references 7: 3 Russian, 4 Western.  
[23-12131]

12131

CSO: 1840

USSR

UDC 612.115.35:616-001.8

**EFFECT OF HEPARIN ON RESISTANCE OF WHITE RATS TO HYPOXIC HYPOXIA**

Kiev FIZIOLOGICHESKIY ZHURNAL in Russian Vol 25 No 4, Jul/Aug 79 pp 348-352 manuscript received 17 Apr 78

BAKANSKAYA, V. V. and NIKONOV, A. A., Chair of Pathologic Physiology, Grodno Medical Institute

[Abstract] The relationship between heparin administration and ability of animals to withstand hypoxia was investigated on 200-250 g male albino rats treated subcutaneously with 200 U/100 g of heparin 24 h before exposure to pressure chamber altitudes of 10,000 and 13,000 m. Under the latter conditions all animals succumbed within 2.5 min; however, at 10,000 m the survival

rate of heparin-pretreated rate was significantly greater than of untreated rate ( $p < 0.01$ ). In addition, subcutaneous administration of 200 U/100 g of heparin lowered oxygen uptake by the whole animal from pre-heparin value of  $23 \pm 1.2$  ml/100 g/15 min to  $14 \pm 2.6$  ml/100 g/15 min after 24 h, and to  $18 \pm 1.6$  ml/100 g/15 min after 72 h. A single intravenous injection of heparin elevated liver, femoral muscle, and splenic  $P_{O_2}$  by 15-22%. Administration of 500 U/100 g of heparin did not prolong survival time or alter oxygen uptake by the rats. Although the exact mechanisms by which heparin brings about its physiologic effects--increased survival under hypoxic conditions, elevation of tissue  $P_{O_2}$ , decreased oxygen uptake by whole animals--remain undefined, heparin appears to be an effective agent in the maintenance of vital functions in experimental hypoxic states. Figures 1; references 13 (Russian).  
[561-12172]

## HYDROGEN FROM ALGAE

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 18 Oct 79 p 4

[Article: "Energy from a Greenhouse Garden Bed"]

[Text] Hydrogen can be produced from plants--this is the conclusion reached by researchers at the Institute of Plant Physiology, Ukrainian SSR Academy of Sciences. Here, algae growing in a greenhouse use energy from the sun to produce this valuable gas. Scientists are conducting a search for promising methods to store this flammable gas. In particular, they intend to chemically bind the hydrogen with a metal such that the compound can be stored in a small container, enough gas to power an automobile 400 kilometers.

1840

USSR

UDC 615.851-036.8-02(048.8)(73)

FACTORS WHICH DETERMINE THE SUCCESS OF PSYCHOTHERAPY: A REVIEW OF CURRENT AMERICAN LITERATURE

Moscow ZHURNAL NEVROPATOLOGII I PSIKHIATRII in Russian No 5, 1979 pp 639-647

ZACHEPITSKIY, R. A.

[Abstract] A literature review is presented of the American attitude toward psychotherapy, based in part on the increase in the need and demand for such therapy due to exacerbation of the socioeconomic crisis in capitalism and the consequent sociopsychological atmosphere in the United States which has resulted in mass alienation and an increase in the incidence of neurotic cases. Of particular interest is the fact that psychotherapy is all too frequently in the hands of businessmen motivated by profit alone. The literature indicates that objective studies on the effects of psychotherapy seem to predominate over existentialist attitudes. The review is concluded with the concession that "The above data deserve, despite their variability and contradictions, careful attention although they obviously require rethinking and correction from the point of view of the Soviet psychotherapeutic school." References 100 (Western).

[560-12172]

BRIEFS

**MEDICAL CONFERENCE IN ALMA-ATA**--An all-union conference on the therapeutics of bacterial infections opened in Alma-Ata on 23 October. Participations were outstanding scientists and specialists from Moscow-Leningrad, Novosibirsk and other Soviet cities, as well as guests from Bulgaria, Poland, Japan and the FRG. The plenary and section sessions are discussing the tasks of health service organs to further reduce infectious disease rates, the state of and prospects for developing the antibiotics industry, and other questions. The conference participants will exchange experiences in treating and preventing diseases. [Alma-Ata domestic service in Russian 1510 GHT 23 Oct 79]



USSR

UDC 615.849.1.015.25:[547.473.2'133+547.755

EFFECTIVENESS OF HYPOXIC HYPOXIA AS PROTECTION AGAINST IONIZING RADIATION  
WITH ADMINISTRATION OF SODIUM HYDROXYBUTYRATE AND MEXAMINE

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 42 No 5, Sep/Oct 79 pp  
550-554 manuscript received 12 Oct 78

BYKOV, N. P., Brain Institute, USSR Academy of Medical Sciences, Moscow

[Abstract] Sodium hydroxybutyrate combined with mexamine was tested for their influence on radioprotective effect of hypoxic hypoxia in mice. Although this combination has a marked antihypoxic effect, it does not remove the radioprotective effect of hypoxic hypoxia. The substances alone, or their combination, do not have a protective effect on mice with hemic and histotoxic hypoxia. This offers the possibility of enhancing protection against incidental ionizing radiation with the use of the above agents and hypoxic hypoxia. References 24: 18 Russian, 6 Western.

USSR

UDC 619:616.988.75-018:636.22/.28

**PATHOMORPHOLOGY OF CHLAMYDO-PARAINFLUENZA INFECTION OF CALVES**

Moscow VETERINARIYA in Russian No 7, 1979 pp 35-38

MITROFANOV, P. M., Gor'kiy Agricultural Institute

[Abstract] Investigations were conducted at a dairy farm complex in the Tomsk Oblast on the pathomorphology of a mixed chlamydo-parainfluenza infection of calves. The histopathologic and clinical observations showed that the symptomatology of chlamydial infection predominated and neonatal calves presented with gastroenteritis, while calves one month and older presented with bronchopneumonia, polyarthrititis, and keratoconjunctivitis. The high mortality of the calves was ascribed to the immaturity of the immune system and extensive multiplication of the chlamydia in the body. An additional factor favoring high mortality was superinfection with streptococci, E. coli, and/or proteus. Staff personnel of the Virus Laboratory of the Institute of Experimental Veterinary Medicine, Siberian Department, VASKhNIL, contributed to this study. Figures 3.

[634-12172]

USSR

UDC 619:615.371:616.988.73

**PHYSICAL AND BIOLOGICAL STABILITY AN AEROSOL VACCINE AGAINST INFECTIOUS LARYNGOTRACHEITIS OF POULTRY**

Moscow VETERINARIYA in Russian No 7, 1979 pp 29-32

DUTKO, YU. S., CHERNYSHEV, V. V., BURTSEV, V. I., RUDOBEL'SKAYA, G. A. and BONDARENKO, I. M., All-Union Scientific Research Institute of Veterinary Virology and Microbiology

[Abstract] Tests were conducted on the biological viability and physical stability of an infectious laryngotracheitis vaccine (ILV) in aerosol form intended for use in chickens, when prepared in various media (physiologic solution, distilled water, meat-peptone broth, physiologic solution + 5% dry defatted milk, physiologic solution + 1% glycerol, physiologic solution + 10% glycerol). Evaluation of the results of chick embryo tests and duration of ILV aerosol dispersion demonstrated that the virus retains high viability in an aerosol at 45-60% relative humidity when suspended in meat-peptone broth, or in physiologic solution with either 5% defatted dry milk or 10% glycerol. During the first 60 min of dispersion the virus concentration decreases 2.1-3.4 fold from time 0 (= 100%) at 45-60% relative humidity, and 3-3.8 fold at high relative humidities (80-96%).

[634-12172]

USSR

UDC 619:576.807.7:616.988.73

IMMUNOENZYMIC DETECTION OF NEWCASTLE VIRUS ANTIGEN

Moscow VETERINARIYA in Russian No 7, 1979 pp 27-29

REUTOVA, YE. G., STAROVOYTOV, N. S., SAVVE, V. D. and KURCHENKO, F. P., All-Union Scientific Research Institute of Veterinary Virology and Microbiology

[Abstract] A description is provided of the application of the immunoperoxidase technique to the detection of viral antigens in tissues and tissue cultures of chicks infected with the Newcastle disease virus (NDV). Evaluation of the tissues and tissue cultures of chicks and chick embryos that succumbed to experimental NDV infection demonstrated that this approach can be utilized, in conjunction with serologic studies, for diagnosis of Newcastle disease. The observed cellular localization of the viral antigens was in accord with previous immunofluorescent studies; however, the immunoperoxidase method offered the advantage of simplicity. Figures 3.  
[634-12172]

USSR

UDC 619:576.807:576.852.2:636.4

MYCOBACTERIAL ISOLATES FROM PIGS

Moscow VETERINARIYA in Russian No 7, 1979 pp 26-27

NECHVAL', I. T., LYASHENKO, N. P. and KADOCHKIN, A. M.

[Abstract] Histopathologic and bacteriologic examination of the lymph nodes of 10230 slaughtered pigs revealed the presence of mycobacteria in 251 animals (2.45%). Evaluation of the resultant 119 isolated cultures of acid-fast microorganisms, and animal susceptibility studies, led to the identification of 81.8% of the cultures as Mycobacterium avium, while the remaining isolates fell into other groups of atypical mycobacteria.  
[634-12172]

USSR

UDC 619:614.9:002.637:628.515/.516:636.083.1

#### AIR CONTAMINATION IN MULTISTORY POULTRY HOUSES

Moscow VETERINARIYA in Russian No 7, 1979 pp 20-22

VOLKOV, G. K. and SAVVINOVA, M. S., All-Union Scientific Research Institute of Veterinary Sanitation

[Abstract] Recent trends toward the construction of multistory poultry houses in the USSR led to the present determination of air quality in one typical 6 story poultry house at the Zavidovskiy Poultry Farm in the Kalinin Oblast, which was built in accordance with Rosgiprosel'khosstroy [sic] instructions. Determinations of microbial counts (streptococci, staphylococci, E. coli, salmonella, fungi), carbon dioxide concentrations, and dust levels in the air at different seasons of the year and under various conditions of ventilation showed that the air quality in the building was unsatisfactory. Microbial counts on the first floor ranged from 0.7 to 120.1 thousand/m<sup>3</sup>, dust levels were in the 1.2-42.5 mg/m<sup>3</sup> range, and the concentration of carbon dioxide varied from 0.15% to 0.3%. The corresponding findings for the 6th floor were 10.1-420 thousand/m<sup>3</sup>, 3-10 mg/m<sup>3</sup>, and 0.1-0.2%, respectively. These observations, in conjunction with studies on the immediate surroundings conducted with indicator bacteria, pointed to the need for improvements in the ventilation of such poultry houses which should incorporate an exhaust shaft passing through all the floors and discharge at least 5 meters above the roof. [634-12172]

USSR

UDC 576.8.097.29+612.42

#### EFFECTS OF BACTERIAL ENDOTOXIN ON THE RES AND ANTIVIRAL IMMUNITY

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian No 3, 1979 pp 215-219 manuscript received 27 Dec 78

STEPANYAN, E. D., BEDZHANOVA, L. P. and PETROSYAN, R. A., Armenian Scientific Research Institute of Animal Breeding and Veterinary Medicine

[Abstract] Investigations on the involvement of the RES (reticulo-endothelial system) in immunity against Aujeszky's disease virus were conducted on 120-170 g white rats injected separately or with a combination of the vaccine with E. coli endotoxin. The results demonstrated that both factors alone or in combination stimulated the phagocytic activity of the RES, led to an increase in the mitotic index of the bone marrow and the spleen, and promoted an increase in splenic plasma cells. However, while administration of the viral

vaccine alone promoted the formation of immunity against Aujeszky's virus, administration of the endotoxin-vaccine mixture completely prevented the development of immunity, while separate administration of the endotoxin and the vaccine partially depressed the development of immunity. Administration of endotoxin alone, 24 h prior to viral challenge, partially protected the animals. These findings suggest that endotoxin interfered in some manner with the processing of specific information necessary for the development of immunity as a result of active immunization. References 20: 7 Western, 13 Russian.

[637-12172]

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